# Mark-Recapture Studies of Taku River Adult Sockeye Salmon Stocks in 2006

James E. Andel
Ian M. Boyce

June 2009

**Pacific Salmon Commission**
**Technical Report No. 26**

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Pacific Salmon Commission
600 - 1155 Robson Street
Vancouver, B.C.
V6E 1B5
(604) 684-8081

**Pacific Salmon Commission**
**Transboundary Technical Committee Report No. 26**

# Mark-Recapture Studies of Taku River Adult Sockeye Salmon Stocks in 2006

*Prepared by:*
James E. Andel[1] and Ian M. Boyce[2]

*Prepared for:*
Pacific Salmon Commission
Transboundary Technical Committee

June 2009

[1] Alaska Department of Fish and Game, Division of Commercial Fisheries, P.O. Box 240020, Douglas, Alaska 99824.
[2] Fisheries and Oceans Canada, Yukon/Transboundary Rivers Area, 100-419 Range Road, Whitehorse, Yukon Territory, Y1A 3V1.

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## AUTHORS

James E. Andel is the Assistant Transboundary Research Biologist for the Alaska Department of Fish and Game, Division of Commercial Fisheries, P.O. Box 240020, Douglas, Alaska 99824. Voice: 907-465-4396, FAX: 907-465-4944, e-mail: jim.andel@alaska.gov.

Ian M. Boyce is the Taku River Stock Assessment Biologist for Fisheries and Oceans Canada, Yukon/ Transboundary Rivers Area, 100-419 Range Road, Whitehorse, Yukon Territory, Y1A 3V1. Voice: 867-393-6739, FAX: 867-393-6738, e-mail: Ian.Boyce@dfo-mpo.gc.ca

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## ABSTRACT

Mark recapture studies of adult Taku River salmon *Oncorhynchus* stocks were conducted by the Department of Fisheries and Oceans Canada, the Alaska Department of Fish and Game, and the Taku River Tlingit First Nation in 2006. The objectives of the studies were to provide inseason estimates of the inriver abundance of sockeye *O. nerka* and to document biological characteristics (migratory timing, migratory rates and age, sex, and size composition) of Taku River sockeye stocks. Tagged-to-untagged ratios of salmon harvested in the Canadian inriver gillnet fisheries were used to develop the estimates of the inriver abundance of sockeye. A total of 5,282 sockeye salmon were captured in fish wheels located at Canyon Island, Alaska, of which 4,950 were tagged and 1,721 (35.0%) were subsequently recovered in fisheries or on the spawning grounds. The inriver run of sockeye salmon past Canyon Island from May 20 to October 3 was estimated to be 166,563 fish (95% confidence interval 136,116 to 197,009). Canadian commercial, aboriginal and test fisheries harvested 21,099, 120, and 262 sockeye, respectively, resulting in a spawning escapement estimate of 145,572 sockeye salmon. Based on mean date and standard deviation of migration timing the sockeye salmon run nearly two weeks late but slightly less compressed than the 1984-2005 average. The Kuthai Lake sockeye salmon stocks dominated the early portion of the run, the King Salmon and Little Trapper Lake the middle portion, and finally the Tatsamenie Lake and mainstem stocks the late portion. The Canyon Island catches of 21,726 pink salmon, 466 chum salmon and 47 steelhead salmon were 38.6% above average, 6.8% below average and 44.4% below average, respectively. The pink salmon run was six days later and slightly more compressed than average.



KEY WORDS: mark-recapture, stratified population estimations, escapement estimation, migratory timing, Taku River, transboundary river, salmon, fish wheel, age, length and sex composition, Pacific Salmon Treaty

## INTRODUCTION

Inseason estimates of the spawning escapement of Taku River sockeye *Oncorhynchus nerka* are needed to fulfill the escapement goal and international harvest sharing requirements for stocks specified by the U.S./Canada Pacific Salmon Treaty. The Taku River mark-recapture project has been conducted annually since 1984 (Clark et al. 1986; McGregor and Clark 1987, 1988, 1989; McGregor et al. 1991; Kelley and Milligan 1999; Andel and Boyce 2004) as a joint Canada/U.S. program involving the Department of Fisheries and Oceans Canada (DFO) and the Alaska Department of Fish and Game (ADF&G) to provide weekly estimates of the Taku River salmon escapement past Canyon Island, Alaska (Figure 1). The Taku River Tlingit First Nation (TRTFN) began providing a technician to assist with operations in 1994. U.S. and Canadian fishery managers use CPUE and stock composition data from the U.S. District 111 and Canadian Taku River commercial gillnet fisheries and escapement estimates from this project to adjust fishing times, catches, and escapements.

The Taku River is a transboundary river which originates in northern British Columbia and flows southwest through the Coastal Mountain Range and Southeast Alaska to the Pacific Ocean (Figure 1). The Taku River supports numerous stocks of salmon that are harvested by Canadian and U.S. gillnet fisheries. The Canadian fishery, which occurs inriver, targets Taku River chinook[1], sockeye and coho salmon and incidentally harvests chinook and pink salmon. The U.S. drift gillnet fishery which occurs in Taku Inlet and approach waters, primarily targets Taku River chinook and sockeye salmon stocks as well as summer chum salmon from local Alaskan enhancement programs during the summer months and mixed stocks of coho in fall. The U.S. fishery also incidentally harvests chinook and pink salmon. The Canada/U.S. Pacific Salmon Treaty (PST) of 1985, and subsequent additions to the original treaty, established conservation (71,000 to 80,000 escapement goal) and harvest sharing (percentage sharing of the allowable catch) objectives for the Taku River sockeye salmon run. The PST mandates cooperative international management of transboundary river stocks. The most intensive cooperative management is directed at sockeye, coho, and chinook salmon.

Mark-recapture methods were used in 2006 to estimate sockeye, chinook and coho salmon escapements. Chinook and coho studies are described in separate reports published by the ADF&G Division of Sport Fish and the Pacific Salmon Commission (in prep.) Fish wheels located at Canyon Island were used to capture sockeye, chinook, and coho for tagging. Tagging data coupled with ratios of tagged to untagged fish in the Canadian fisheries upstream were used to develop escapement estimates inseason.

The fish wheels also catch pink, chum and steelhead salmon. Although abundance is not estimated, the catches do provide an index of interannual variation. This is especially valuable if the entire migration period is bracketed by the period of fish wheel operation (for example, as with pink salmon).

Age, length, and sex data were collected from sockeye, pink, and chum salmon caught in the fish wheels.

[1] New directed chinook fisheries have been implemented as a result of an agreement reached between Canada and the U.S. in February 2005.

## OBJECTIVES

The primary goals of the Taku River sockeye salmon tagging program in 2006 were to obtain information on the above-border run size, distribution, migratory timing, and age-sex-size composition of sockeye salmon stocks in the Taku River drainage.

Specific objectives of this study were:

1. Estimate the total spawning abundance of sockeye salmon returning to Canadian portions of the Taku River with an estimated coefficient of variation no greater than 10% of the estimate. Estimate weekly inriver abundance with a coefficient of variation no greater than 20% of the estimate;

2. Estimate the age, length, and sex composition of sockeye salmon migrating past the fish wheel site on a weekly basis;

3. Forecast total abundance of sockeye salmon on a weekly basis based on tag-recovery data and historical migration-timing data;

4. Quantitatively describe the migratory timing (mean and variance) of the sockeye, pink, and chum salmon migrations past Canyon Island; and

5. Estimate the annual age and sex composition of pink and chum salmon migrating past the fish wheel site.

Objectives for the Taku River coho and chinook salmon mark-recapture studies are outlined in reports published by the Pacific Salmon Commission and/or the ADF&G Division of Sport Fish.

## METHODS

### *Study Area Description*

The Taku River originates in the Stikine plateau of northwestern British Columbia, and drains an area of approximately 17,000 square kilometres (Figure 1). The merging of two principal tributaries, the Inklin and Nakina Rivers, approximately 50 km upstream from the international border forms the Taku River. The river flows southwest from this point though the Coast Mountain Range and empties into Taku Inlet about 30 km east of Juneau, Alaska. Approximately 95% of the Taku River watershed lies within Canada.

The Taku River is turbid, with much of its discharge originating in glacial fields on the eastern slopes of the Coast Range Mountains. This turbidity precludes complete enumeration of salmon escapements in many areas by aerial or foot surveys. Water discharge in the summer generally increases in proportion to the amount of sunshine received in the interior on coastal mountain ranges (ADF&G 1955). Winter (February) flows range from approximately 40-104 $m^3/s$ at the U.S. Geological Survey water gauging station located on the lower Taku River near Canyon Island (Schellekens et al. 1996). Discharge increases in April and May and reaches a maximum average flow of 700-1,400 $m^3/s$ during June. Flow usually remains high in July and drops in late August. The efficiency of fish wheels used to capture fish for

tagging and the effectiveness of the Canadian commercial fishery are affected by the magnitude of river discharge. Sudden increases in discharge in the lower river result from the release of the glacially impounded waters of Tulsequah Lake (Kerr 1948; Marcus 1960). These floods usually occur once or twice a year between May and August. During water years 1988 to 1995 the instantaneous peak flow due to a Tulsequah event was 2,889 $m^3/s$ (August 17, 1989; Shellekens et al. 1996). During the floods, water levels fluctuate dramatically and the river carries a tremendous load of debris.

### *Fish Wheel Operation*

Migrating adult salmon were captured with two fish wheels at Canyon Island, located approximately 4 km downstream from the international border (Figure 1). Each fish wheel consisted of two aluminum pontoons in a framework, measuring approximately 12 m in length and 6 m in width and filled with closed-cell styrofoam for flotation, supporting an axle, paddle, and basket assembly. Two fish-catching baskets were rotated about the axle by the force of the water current against the baskets and/or paddles. As the fish wheel baskets rotated, they scooped up salmon. V-shaped slides attached to the rib structure of each basket directed fish to aluminum liveboxes bolted to the outer sides of the pontoons.

The fish wheels were positioned in the vicinity of Canyon Island on opposite riverbanks, approximately 200 m apart, and have been operated in identical locations since 1984. They were secured in position by anchoring to large trees with 0.95 cm steel cable and were held out from, and parallel to, the shoreline by log booms. The Taku River channel at this location is ideal for fish wheel operation. The river is fully channelized through a relatively narrow canyon that has very steep walls.

The fish wheels rotated at 0-4 r.p.m., depending on the water velocity and the number of attached paddles. When water levels subsided, more paddles were attached and the fish wheels were moved farther out from shore into faster water currents to maintain a speed of basket rotation adequate to catch fish.

Over time it has become clear that Tulsequah River floods are preceded by a sudden decline in river temperature and a corresponding rapid increase in river level. It is standard operating procedure to stop the fish wheels when river levels near 290 cm (114 inches, standardized gauge measure). By doing so, damage to the fish wheels is minimized and significant labour and material costs avoided.

Baskets and liveboxes are removed from the pontoons and stored on high ground during the off season. The pontoons are towed upstream to a backwater slough and securely moored during the off season.

### *Tagging and Sampling Procedures*

All sockeye captured in the fish wheels were sampled for sex and mid-eye to fork of tail length (MEF). In addition, a sub-sample of 260 sockeye salmon per week were sampled for scales. Clethral arch to fork of tail (CAF) length measurements were taken from 200 sockeye salmon throughout the season, and paired with MEF measurements. Canadian fish buyers prefer a headless, gutted product; because of this, the only length measurement available from the commercial fishery was CAF. The paired MEF and CAF measurements from the fish wheels allow conversion of CAF measurements to MEF.

All chum salmon were sampled for sex, scales, and MEF length. The daily sampling goal for pink salmon was 25 fish; these fish were sampled for sex and MEF length.

All uninjured sockeye greater than 350 mm (MEF length) were tagged with numbered spaghetti tags. Sockeye less than 350 mm (MEF) were not tagged because fish in this size range are virtually unsusceptible to capture in the upriver gillnet fishery from which tagged to untagged ratios are used to develop population estimates for these species. Sockeye salmon with serious wounds (most often thought to be seal inflicted) were not tagged. Pink, chum and steelhead salmon were not tagged.
Salmon were dipnetted from the fish wheel liveboxes into a tagging trough partially filled with river water. Spaghetti tags (Floy Tag and Manufacturing Inc., Seattle, WA)[2] were applied to sockeye salmon as follows: one person held the fish in the tagging trough while a second person inserted a 15 cm applicator needle and attached spaghetti tag through the dorsal musculature immediately below the dorsal fin. The ends of the spaghetti tag were then knotted together with a single overhand hitch. Biological sampling was also conducted during application of the spaghetti tags. Sex and length measurements were recorded, and scale samples taken from all chum salmon, and sub-samples of the sockeye salmon caught. Sex and length data were also collected daily from a sub-sample of 25 pink salmon, but scales were not taken from this species. The tagging and sampling procedures took from 40 to 60 seconds per fish to complete. The fish were then immediately and gently released back into the river.

The spaghetti tags used for sockeye salmon were made of hollow fluorescent orange PVC tubing (approximately 2.0 mm in diameter and 30 cm in length) and were consecutively numbered and labeled with project description information.

In general, fish wheel catches were sampled in the morning, afternoon, and evening. Less frequent checks, morning and evening, were made during lulls in the migration to minimize crew overtime. During peak migration times catches were sampled more frequently, early in the morning and late at night.

### *Tag Recovery*

Sockeye were inspected for tags in Canadian commercial and test fisheries, which occurred in Canadian portions of the Taku River within 20 km of the international border. Catches that were not available by statistical week were censored, for example the aboriginal ("food fish") catch. All sockeye salmon caught in the commercial and test fisheries were considered to have been examined for tags and all of the captured tags were considered to have been recovered.

The commercial fishery was open from one to seven days per week from April 30 to to October 4. Chinook salmon were targeted until mid-June; sockeye salmon from then until mid-August; and finally coho salmon for the remainder of the season. Test fisheries were conducted from May 3 through May 27 and then from September 3 through October 5 targeting chinook and coho salmon, respectively. Drift and set gillnets were the gear types used; mesh sizes ranged from 15 cm (5 1/2 inches) to 20.4 cm (8 inches) with the mesh size of 15 cm predominating during the sockeye season.

Daily tag return was a condition of the Canadian commercial licence. As an additional incentive, a cash reward of $5.00 (Canadian) was offered by DFO for each sockeye tag returned from any fishery (i.e. commercial, aboriginal, or test fishery). Canadian catch statistics and tags were collected daily during fishery openings by DFO personnel stationed at Ericksen Slough, just upstream of the Tulsequah River. Catch statistics were communicated to the DFO office in Whitehorse via single side band radio or satellite telephone and then relayed to the ADF&G office in Juneau. ADF&G offered a $2.00 (U.S.) reward for

[2] Mention of trade names does not constitute endorsement by DFO or ADF&G.

each tag returned from the District 111 and the inriver personal use fisheries. In addition, it conducted a post-season lottery to award a $100.00 bonus to one of the U.S. fishers that returned tags.
Tag observations and recoveries were also made at enumeration weirs located at Kuthai, King Salmon, Little Trapper, and Tatsamenie lakes. Additional recoveries were made on directed sampling excursions to the Nahlin River and mainstem Taku River spawning grounds.

Sex, length, and scale data were obtained from these locations as well as the commercial and test fisheries.

Tagging and tag recovery data were organized by statistical week for analysis. Statistical weeks begin at 00:01 AM Sunday and end the following Saturday at midnight, with weeks being numbered sequentially beginning with the week encompassing the first Saturday in January. Inclusive dates for 2006 statistical weeks are shown in Appendix A.

### *Statistical Methods*

Sockeye salmon tagging data, tag recovery data and catch data were entered into an abundance estimation program which is referred to as the Stratified Population Analysis System (SPAS) (Arnason et al. 1996). This model provides stratified population estimates using maximum likelihood techniques (Plante 1990) and associated variances when $s$ (the number of tagging stratum) and $t$ (number of recovery stratum) are not equal. For cases in which $s=t$, the model provides stratified population estimates based on Chapman and Junge (1956) and Darroch (1961). This stratified method was used because it allows the probabilities of capture in tagging and recovery strata to vary across the strata.

Assumptions necessary to form consistent (i.e., approaching unbiased as sample size increases) stratified mark-recapture estimates in this study include (Arnason, et al. 1996):

1. All fish that pass Canyon Island during the period of interest have a non-zero probability of recovery in the commercial fishery and all fish caught by the fishery have a non-zero probability of being tagged (i.e., the population is closed);

2. There is no tag loss, tag induced mortality, tag mis-identification or non-reporting. Should any of these occur, they are to be estimated and adjusted for;

3. All fish, tagged or not, are independently caught with the same probability in any given recovery stratum;

4. All fish, tagged or not, move from a given release stratum to the recovery strata independently with the same probability distribution; and

5. There are no release strata or recovery strata where no tags are released or found respectively, and there are no rows or columns of the release-recovery matrix which are linear combinations of other rows or columns respectively.

The first assumption is addressed by the fact that two fish wheels are used in a consistent manner throughout the season and that the inriver fishery is conducted weekly. For the second assumption, tag-induced mortality was shown to be insignificant in a holding study conducted by McGregor and Milligan (1991, unpublished data). The extent of tag loss by shedding, misidentification, or non-reporting, was also found to be negligible in that study and several subsequent ones (e.g. Kelley et al., 1997). The third and

fourth assumptions have not been assessed, while the fifth assumption is met by pooling of various recovery or release strata.

Inriver sockeye salmon run estimates were generated on an inseason basis in 2006. Mark-recapture data was forwarded to the Juneau ADF&G and Whitehorse DFO offices after each day of the commercial fishery. Data was analyzed and inriver abundance estimates were developed. Historical migratory timing data was then used each week to project the total inriver run size for the season. Due to the estimated three to four days travel time for fish between the Taku Inlet gillnet fishery and Canyon Island (Clark et al. 1986), as well as between Canyon Island and the Canadian fishery (based on current year tag recovery data), our estimates of inriver abundance corresponds with the movement of Taku River sockeye salmon through District 111 approximately one to two weeks earlier.

Fishery management decisions that affect the magnitude and distribution of harvests and escapements are based in principle on the measured or perceived abundance of fish through time. Mundy (1982) described a set of statistics, termed migratory timing statistics, useful for characterizing the annual timing of fish migrations and for comparing the timing of migrations between years. Abundance per unit of time is divided by the total abundance throughout the migration to generate a time series of proportions, or time density. The shape of the time density characterizes the timing and temporal distribution of the migration. Two simple features of the time density are the mean date and variance or dispersion of the migration through time. We used fish wheel CPUE as an index of the abundance of fish migrating past Canyon Island, and calculated migratory timing statistics following the procedures of Mundy (1982). The mean date of passage in a migration of *m* days was estimated by:

$$\bar{t} = \sum_{t=1}^{m} t * P_t \quad , \qquad (1)$$

where $\bar{t}$ was the mean day of the migration (t=1 was the first day of the migration and m was the last day), and $P_t$ is the proportion of the total cumulative fish wheel CPUE that occurred on day t. The calculated mean date is reported as the corresponding calendar date.

The variance of the migrations was estimated by:

$$s_t^2 = \sum_{t=1}^{m} (t - \bar{t})^2 * P_t \quad , \qquad (2)$$

The timing of individual sockeye salmon stocks past Canyon Island was derived from recoveries of tagged fish on the spawning grounds and was weighted by fish wheel CPUE to permit the escapement of a particular stock to be apportioned to week of passage past Canyon Island. The formula we used for determining the proportion of the run occurring each week for each stock was:

$$\frac{\frac{C_k * T_{ks}}{T_k - T_{kc}}}{\sum_{j=22}^{38} \frac{C_k * T_k}{T_K - T_{kc}}} \quad , \qquad (3)$$

where: $k$ is the statistical week of interest; $C_k$ is the weekly proportion of the total season's fish wheel CPUE, $T_{ks}$ is the number of spawning ground recoveries of stock s that were tagged in week $k$, $T_k$ is the number of fish tagged at Canyon Island in statistical week $k$, and $T_{kc}$ is the number of fish tagged at Canyon Island in statistical week $k$ and caught in the Canadian fishery.
An assumption implicit in this calculation is that the removal of fish by the Canadian inriver fishery does not alter the migratory timing distribution of individual stocks. This assumption may be violated because the Canadian fishery harvest rate of the inriver run varied between fishing periods.

## RESULTS

### *Fish Wheel Operation*

Fish wheels were operated on the Taku River from May 20 through October 3. Fish wheel I, located furthest upriver, was installed on May 20; fish wheel II was installed on May 27. Additional details regarding operations are presented in Appendix B.

The aluminum two-basket configuration first used in 1996 has proven to be effective at very low river levels (as measured on a permanent staff gauge).[3]

### *Fish Wheel Catches*

Daily catches of sockeye, pink, and chum salmon in the Canyon Island fish wheels are listed in Appendices B.1. and B.2. Dates of operation and the total fish wheel catch by species for the 1984 to 2006 period are presented in Table 1. Graphs of the fish wheel CPUE for sockeye, pink, and chum salmon are included in Figure 3.

The catch of sockeye salmon in the Canyon Island fish wheels in 2006 was 5,282. The total catch was 2.1% below the 1984 to 2005 average (Table 1; Appendix B.1). Fish wheel catches occurred from June 9 through October 3, and peaked during statistical week 31 (July 30 through August 5), when 977 sockeye salmon were captured. Prior to the first Canadian directed sockeye commercial fishery openings on June 18 (statistical week 25), 22 sockeye salmon (0.4% of the season total) had been captured in the fish wheels (Appendix B.1). As in past years, the daily catches fluctuated dramatically. The effects of the U.S. commercial fishery in Taku Inlet were observable as fish wheel catches declined to their lowest levels between Thursday and Saturday weekly; this suggested that the average travel time between Taku Inlet and Canyon Island was three to four days.

The total 2006 pink salmon catch in the fish wheels at Canyon Island was 21,726 (Table 1; Appendix B.2), 38.6% above the 1984 to 2005 average. The peak daily catch of pink salmon in 2006 (3,535 fish) occurred on July 28. The 2006 fish wheel catch of chum salmon was 466. The total catch was 6.8% below the 1984 to 2005 average of 500. The peak daily catch of chum salmon (36 fish) occurred on September 6 and September 7 (Appendix B.2). The total fish wheel catch of steelhead and Dolly Varden in 2006 were 47 and 341 fish respectively. The total catch of 47 steelhead was 44.4% below the 1984 to 2005 average of 85. The total catch of 341 Dolly Varden was 44.8% of the 1984 to 2005 average.

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[3] The aluminum baskets were experimentally used in 1996. Previous programs were constrained by low water conditions, particularly in the fall, which would not effectively turn the fish wheels.

### *Tagging and Recovery Data*

Of the 5,282 sockeye salmon caught in the Taku fish wheels, 4,950 were tagged (93.3%). Only jack sockeye salmon (fish smaller than approximately 350 mm MEF that have spent only one year at sea) or sockeye with noticeable injuries were not tagged. Daily numbers of sockeye caught and tagged are listed in Appendix B.1. Recoveries downstream of Canyon Island totaled 18 (0.09% of tags applied), leaving 4,932 available for recapture in Canadian fisheries. The Canadian commercial fishery recaptured 694 tagged sockeye and accounted for 34% of the total sockeye tags recovered or observed in upstream fisheries (Table 2). The Canadian test fishery recovered 19 tags (0.9%). The U.S. Personal Use fishery recovered 18 tags. Tags were also observed in terminal areas, principally Little Trapper, Tatsamenie, Kuthai, and Kim Salmon Lakes lakes. These numbered 578, 665, 14, and 50 respectively. The escapements to these locations numbered 25,265, 22,475, 1,015 and 2,177 sockeye respectively.

### *Escapement Estimates*

Ratios of tagged to untagged sockeye salmon in the Canadian commercial, test and catch-and-release gillnet fisheries were used to estimate the magnitude of the inriver run of sockeye salmon that passed Canyon Island during the period of June 18 to September 16, 2006. Fishwheel CPUE for sockeye was used to expand the inriver run estimate for periods of low tag recovery and effort (SW 22-24, 38-41).

A total of 713 tags with corresponding recovery date information were returned from 21,361 sockeye salmon examined in the Canadian fisheries (Table 3). Tagging data from statistical weeks 24 through 25 (June 11 through June 24) were pooled due to low tag recovery numbers. Tagging data from statistical weeks 28 through 29 (July 9 through July 22) and weeks 30 through 31 (July 23 through August 5) were pooled due to statistically similar tagging ratios. Recovery data from statistical weeks 25 through 29 (June 18 through July 22), 31 through 32 (July 30 through August 12), as well as 36 through 37 (September 3 through September 16) were each pooled due to statistically similar marked fractions. Tagging and recovery data were grouped into 10 and 7 strata, respectively (Table 4).

Using a maximum likelihood Darroch estimator, we estimated that 166,563 sockeye salmon passed Canyon Island between June 18 and September 16. The approximate 95% confidence interval associated with this estimate is 136,116 to 197,009 fish. To estimate the total run of sockeye salmon that passed before and after the period of the mark-recapture estimate, the estimate was expanded by the cumulative proportion of fish wheel CPUE. Using this method, it was estimated that 1,035 additional sockeye passed Canyon Island during statistical weeks 22 through 24 and 38 through 41. This estimate was also reduced by the U.S. inriver personal use fishery catch which was estimated at 545 sockeye using a tag return expansion method based on the current inriver commercial marked fraction (3.3%). The total estimate of sockeye salmon run migrating past Canyon Island was 167,053. This estimate is 27.3% higher that the 1984 to 2005 average (131,148 sockeye salmon; Table 5; Figure 4).

The Taku River sockeye salmon run above Canyon Island was exploited by the Canadian fisheries at an estimated rate of 12.8%, compared to a 1984-2005 average of 19.4% (range 11.6 to 31.2%; Table 5). After removal of 21,099, 120, and 262 sockeye salmon by the Canadian commercial, aboriginal and test fisheries respectively from the estimated escapement to the Canada/U.S. border, the spawning escapement totaled an estimated 145,572 fish (Table 4). This is 38.2% above the 1984-2005 average of 105,344 fish.

The escapement estimate does not include two groups of sockeye salmon that spawn in the drainage: (1) fish that spawn in streams located downriver from Canyon Island, and (2) jack sockeye salmon. The number of sockeye salmon spawning downstream from Canyon Island is unknown but presumed to be small; spawning has been observed annually in lower tributaries of the lower Taku River (i.e. Fish Creek, Sockeye Creek, and Yehring Creek) during annual aerial and foot surveys (McGregor, personal communication; Figure 1). The contribution of jacks can represent a sizable portion of the Taku River run; the contribution of jack (one ocean) sockeye salmon to the Canyon Island fish wheel catches from 1983 to 2005 averaged 3.9% (range 0.0 to 9.1%; Table 6). However, in 2005 the contribution of jacks was only 1.7%.

A necessary assumption of the population estimation technique used is that all fish in a particular recovery stratum, whether tagged or untagged, have the same capture probability. A factor that could violate this assumption is that tagging and recapture gear are selective for different sized fish. Based on length frequency distributions of sockeye salmon tagged at the fish wheels and of tagged sockeye recovered in the commercial fishery it is clear that the fish wheels tend to capture a higher proportion of smaller fish or the fishery captures a higher percentage of large fish (Figure 5).

In past years (Kelley et al. 1996, McGregor et al. 1991) the possible effects of size selectivity on the sockeye salmon population estimate were assessed by stratifying tagging and recovery data by size class. Results for those years demonstrate that the mark-recapture estimates are robust in respect to fish length differences between the tagging and recapture events. The summed abundance estimates obtained for large and small sockeye salmon separately were not significantly different than the pooled estimates. Based on those results the 2005 mark-recapture data was not examined by fish size.

### *Migratory Timing*

The mean date (August 4) of the sockeye salmon migration in 2006 was significantly later (15 days) than the 1984-2005 average (Table 7). The standard deviation was slightly less (18.6 days in 2006 versus an average of 18.9 days); meaning the run was more compressed than average. Migratory timing statistics (mean date July 26; standard deviation 7.8 days) showed the pink salmon run timing was six days later than average and more compressed (averages for mean date and standard deviation were July 20 and 8.2 days respectively). The migratory timing relative to average for chum salmon is more difficult to assess because the duration of fish wheel operations has varied between years and has failed to cover the complete migration of this species. Assuming fish wheel CPUE in 2006 was reflective of the run, the mean date of migration was September 4 (standard deviation 13.2 days). However, it is likely that this assumption was not completely valid as there were still a small number of chum being caught at the time of fish wheel demobilization.

### *Sockeye Salmon Stock Timing*

The timing of four individual stock groups of sockeye salmon past Canyon Island in 2006 was determined using recoveries of tagged fish from enumeration weirs (Table 9; Figure 6). These were weirs on the outlet streams of Kuthai (14 tags), King Salmon (48 tags), Little Trapper (413 tags), and Tatsamenie (512 tags) lakes (Table 2).

The Kuthai Lake stock migrated past Canyon Island the earliest of these four stocks examined. These fish were passing Canyon Island from statistical weeks 24 to 30 (June 11 to July 29). The peak of the Kuthai Lake migration took place during statistical week 25 (June 18 to June 24).

The next stock to migrate past Canyon Island was the King Salmon Lake stock. This occurred from statistical weeks 26 to 31 (June 25 to August 5), peaking during statistical week 27 (July 2 to July 8).

Little Trapper Lake sockeye salmon were slightly later than King Salmon Lake fish but peaked during the same week. They were present at Canyon Island during statistical weeks 26 to 33 (June 25 to August 19).

The Tatsamenie Lake stock exhibited both the latest and most protracted return timing; tagged fish bound for this system were present at Canyon Island between statistical weeks 28 to 37 (July 9 to September 16). The peak week of migration for Tatsamenie Lake sockeye was statistical week 32 (August 6 to August 12).

### *Inriver Sockeye Salmon Migration Rates*

Inriver travel times of four lake stocks could be determined from the recovery of tagged fish at enumeration weirs as described in the previous section (Table 9). Inriver travel times from Canyon Island for the Kuthai Lake, King Salmon Lake, Little Trapper Lake and Tatsamenie Lake stocks are shown in Figure 7. Travel times averaged 43.5, 25.0, 24.0 and 26.9 days for each of these respective stocks.

Migration rates generally increased over the course of the run. Kuthai Lake fish tagged in statistical week 25 averaged 53.5 days in transit, while those tagged in statistical week 28 averaged 44.0 days. King Salmon Lake fish tagged in statistical week 26 averaged 25.2 in transit while those tagged in statistical week 30 averaged 18.0 days. Little Trapper Lake fish tagged in statistical week 26 averaged 38.8 days in transit while those tagged in statistical week 33 averaged 16.2 days. For the Tatsamenie stock, fish tagged in statistical week 29 averaged 30.3 days in transit while fish tagged in statistical week 37 averaged 18.3 days.

### *Age, Length, and Sex Composition*

The age and sex compositions, by sex and time period, of the Canyon Island fish wheel catches of sockeye and chum salmon in 2006 are summarized in Appendices C.1 and C.2. Lengths at age are presented in Tables 10 and 12.

For sockeye salmon, age-1.3 fish were most prevalent (47.3%) with age-1.2 fish comprising 27.2%, age-2.2 7.5%, age-0.2 8.2%, age-2.3 2.3%, age-0.3 5.5%, and very small numbers of age-0.1, 1.1, 0.4, and 1.4 fish (Table 6). The lengths of age 1.2 and 1.3 sockeye salmon were similar to the 1983 to 2005 averages (Table 10). Females comprised 55.1% of the fish wheel catch of sockeye salmon (Appendix C.1).

Fish wheel catches of chum salmon were primarily comprised of age-0.3 (66.7%) fish, which is higher than the 1983-2005 average of 52.6% (Table 11). Age-0.4 fish constituted 31.2% of the fish wheel catch, lower than the 45.3% average. Female chum salmon were more prevalent (56.3%) than males (Appendix C.2). The average lengths at age for chum salmon passing Canyon Island were 615, 647, and 681 mm (MEF) for age 0.2, 0.3, and 0.4 fish respectively; these were slightly above the 1983 to 2005 averages (Table 12).

## DISCUSSION

The accuracy of mark-recapture studies in providing estimates of abundance is dependent on the degree to which the underlying assumptions of the analytical methods used are satisfied. We have chosen to use a stratified Darroch type estimator for our Taku River sockeye abundance estimates because we have different capture probabilities in the tagging and recovery strata due, primarily, to fluctuations in river level. In estimating the abundance of adult sockeye salmon in the Taku River we assumed: (a) tagging of adult sockeye salmon was in proportion to their numbers immigrating over time; (b) no sockeye salmon entered or left the system between the tagging and recovery events or sockeye salmon that made up the population of the capture strata have a non-zero probability of recapture during the recovery event; (c) no tag-induced mortality occurred; (d) the probability of recovering sockeye salmon is independent of its tagged/untagged status. Assumptions underlying this model, outlined above, have been examined at various times during the course of this project (Kelley et al. 1997, McGregor et al. 1991).

With respect to assumption (a), tagging efforts at the Taku River fish wheels and recovery efforts at the Canadian commercial and test fisheries were conducted on a frequent basis through the season. Both of the fish wheels were strictly maintained and adjusted throughout the entire sockeye salmon run. The wheels operated 24-hours per day except during equipment breakdowns; however it is known that river conditions affect the fishing efficiencies of both wheels. Recovery efforts were conducted a minimum of twice per week throughout the season, but water conditions can also affect the efficiency of commercial and test fishery set and drift nets. We are able to work around these variations in gear efficiency by using the Darroch stratified estimator for generating abundance estimates; this allows the probabilities of capture in tagging and recovery strata to vary across time but not within these strata.
It was likely that assumption (b) was violated in recent years of the Taku sockeye mark–recapture program because there were significant differences in the cumulative distribution function of length between fish sampled at the fish wheels and at the recovery location (Figure 5). Smaller fish were more prevalent in fish wheel samples than among the recovery samples. Stratification of mark–recapture data by size would remove possible bias in population estimates caused by differences in capture probabilities due to fish size (Bernard and Hansen 1992). In past studies, summed abundance estimates obtained for large and small sockeye salmon were not significantly different than the pooled estimates (Boyce and Andel, 2005). Based on those results the mark-recapture data for 2006 was not examined by fish size. We were able to make some correction for this possible bias by completely removing smaller "jack" salmon (less than or equal to 360 mm MEF length) from tag and recovery data.

We were able to assess the short-term loss of tags caused by physical breakage or shedding. Fish that lose their spaghetti tags are readily identifiable by the presence of entrance and exit holes just below the dorsal fin created during tag application. Those holes effectively serve as a secondary mark. A substantial number of fish were recaptured in the fish wheels shortly after tagging. In the fish wheels, no sockeye or coho salmon were found throughout the season that had the needle hole "secondary mark" and no spaghetti tag. These results are consistent with those observed in previous years. In addition, in statistical weeks 25 through 38, over 2,136 fish were examined for tagging needle marks in the Canadian commercial and test fisheries after tags had been removed by fishers. The number of tagging needle marks was compared with tag recovery rates, and found to be both lower overall (1.6% versus 3.4%) (Appendix D). We therefore believe that breakage or shedding of tags among sockeye subjected to the inriver fishery is minimal or nonexistent. The close proximity of the fishery to the tagging site (4 km) results in a very short travel time between the two locations.

Fish wheels were not modified in 2006 and functioned effectively. As in recent years, a 2-basket configuration was used for the entire season.

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Table 1. Canyon Island fish wheel dates of operation and catches of sockeye, pink, chum, steelhead, and Dolly Varden, 2006

| Year | Dates of Operation | Sockeye | Pink | Chum | Steelhead | Dolly Varden |
|---|---|---|---|---|---|---|
| 1984 | 6/15-9/18 | 2,334 | 20,751 | 316 | NA | NA |
| 1985 | 6/16-9/21 | 3,601 | 27,670 | 1,376 | NA | NA |
| 1986 | 6/14-8/25 | 5,808 | 7,256 | 80 | 14 | 2,716 |
| 1987 | 6/15-9/20 | 4,307 | 42,786 | 1,533 | 38 | 868 |
| 1988 | 5/12-9/19 | 3,292 | 3,982 | 1,089 | 37 | 701 |
| 1989 | 5/5-10/1 | 5,650 | 31,189 | 645 | 34 | 1,308 |
| 1990 | 5/3-9/23 | 6,091 | 13,358 | 748 | 33 | 1,433 |
| 1991 | 6/8-10/15 | 5,102 | 23,553 | 1,063 | 135 | 326 |
| 1992 | 6/20-9/24 | 6,279 | 9,252 | 189 | 22 | 241 |
| 1993 | 6/12-9/29 | 8,975 | 1,625 | 345 | 30 | 375 |
| 1994 | 6/10-9/21 | 6,485 | 27,100 | 367 | 107 | 584 |
| 1995 | 5/4-9/27 | 6,228 | 1,712 | 218 | 65 | 509 |
| 1996 | 5/3-9/20 | 5,919 | 21,583 | 388 | 65 | 681 |
| 1997 | 5/3-10/1 | 5,708 | 4,962 | 485 | 102 | 454 |
| 1998 | 5/2-9/15 | 4,230 | 23,347 | 179 | 120 | 323 |
| 1999 | 5/14-9/28 | 4,639 | 23,503 | 164 | 76 | 330 |
| 2000 | 5/14-10/3 | 5,865 | 6,529 | 423 | 159 | 244 |
| 2001 | 5/27-9/27 | 6,201 | 9,134 | 250 | 125 | 196 |
| 2002 | 5/19-9/14 | 5,812 | 5,672 | 205 | 90 | 419 |
| 2003 | 5/20-10/4 | 5,970 | 15,491 | 262 | 49 | 285 |
| 2004 | 5/12-10/4 | 6,255 | 8,464 | 414 | 313 | 63 |
| 2005 | 5/5-10/4 | 3,946 | 15,839 | 257 | 78 | 293 |
| 2006 | 5/20-10/3 | 5,282 | 21,726 | 466 | 47 | 341 |
| Average(84-05) | | 5,395 | 15,671 | 500 | 85 | 617 |

Table 2. Summary of Taku River sockeye tag recoveries by location and species, 2006

| | Tags Recovered | Tags Observed Only | Total | Fish Inspected | Tag Ratio | Percent Tags Observed |
|---|---|---|---|---|---|---|
| Commercial Fishery | 694 | 0 | 694 | 21,099 | 0.033 | 0.339 |
| Test Fishery | 19 | 0 | 19 | 262 | 0.073 | 0.009 |
| King Salmon Lake | 48 | 2 | 50 | 2,177 | 0.023 | 0.024 |
| Kuthai Lake | 14 | 0 | 14 | 1,015 | 0.014 | 0.007 |
| Little Trapper Lake | 413 | 165 | 578 | 25,265 | 0.023 | 0.283 |
| Tatsamenie Lake | 512 | 153 | 665 | 22,475 | 0.030 | 0.325 |
| Taku River mainstem | 6 | 0 | 6 | 481 | 0.012 | 0.003 |
| Nahlin River | 1 | 0 | 1 | 180 | 0.006 | 0.000 |
| Tatsatua Creek | 0 | 0 | 0 | - | - | 0.000 |
| U.S. downstream | 18 | | 18 | - | - | 0.009 |
| Total | 1,725 | 320 | 2,045 | 72,954 | | 1.000 |

Table 3. Tagging and recovery data from the 2006 Taku River sockeye salmon mark-recapture program. Data includes number of sockeye salmon tagged and recovered in the Canadian commercial fishery by statistical week (downstream recoveries excluded).

| Statistical Week of Tagging | Statistical Week of Recovery | | | | | | | | | | | | | | | Total Tags Recovered | Total Tags Applied | Tag Ratio Recovered/ Applied |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | | | |
| 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0.000 |
| 24 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 14 | 0.143 |
| 25 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 42 | 0.048 |
| 26 | 0 | 0 | 20 | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 36 | 175 | 0.206 |
| 27 | 0 | 0 | 0 | 14 | 16 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 | 194 | 0.165 |
| 28 | 0 | 0 | 0 | 0 | 20 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 362 | 0.116 |
| 29 | 0 | 0 | 0 | 0 | 0 | 35 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 294 | 0.153 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 10 | 60 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 72 | 790 | 0.091 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 128 | 30 | 12 | 3 | 0 | 1 | 0 | 0 | 174 | 927 | 0.188 |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 58 | 3 | 1 | 0 | 0 | 0 | 99 | 655 | 0.151 |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 71 | 30 | 0 | 1 | 1 | 0 | 103 | 505 | 0.204 |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 68 | 13 | 0 | 0 | 0 | 81 | 428 | 0.189 |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 0 | 10 | 227 | 0.044 |
| 36 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 6 | 171 | 0.035 |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 9 | 136 | 0.066 |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0.000 |
| Total | 0 | 2 | 22 | 29 | 36 | 60 | 19 | 189 | 67 | 141 | 105 | 24 | 5 | 14 | 0 | 713 | 4,932 | 0.145 |
| Sockeye Examined[a]: | | | | | | | | | | | | | | | | Total | | |
| Test Fishery | | | | | | | | | | | | | 122 | 120 | 20 | 262 | | |
| Can. Comm. Catch | 25 | 127 | 811 | 930 | 1,109 | 1,757 | 1,919 | 6,058 | 2,223 | 2,825 | 2,569 | 746 | | | | 21,099 | | |
| Aboriginal Fishery | | | | | | | | | | | | | | | | | | |
| Total | 25 | 127 | 811 | 930 | 1,109 | 1,757 | 1,919 | 6,058 | 2,223 | 2,825 | 2,569 | 746 | 122 | 120 | 20 | 21,361 | | |

[a] Equals the number examined for Canyon Island tags.

Table 4. Pooled-strata tagging and recovery data used to calculate mark-recapture estimates of the inriver sockeye salmon run past Canyon Island, 2006.

| Statistical Week of Tagging | Statistical Week of Recovery | | | | | | | Total Tags Recovered | Total Tags Applied | Tag Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| | 25-29 | 30 | 31-32 | 33 | 34 | 35 | 36-37 | | | |
| 24-25 | 4 | | | | | | | 4 | 56 | 0.071 |
| 26 | 36 | | | | | | | 36 | 175 | 0.206 |
| 27 | 32 | | | | | | | 32 | 194 | 0.165 |
| 28-29 | 77 | 9 | 1 | | | | | 87 | 656 | 0.133 |
| 30-31 | | 10 | 220 | 12 | 4 | | | 246 | 1717 | 0.143 |
| 32 | | | 37 | 58 | 3 | 1 | | 99 | 655 | 0.151 |
| 33 | | | | 71 | 30 | | 2 | 103 | 505 | 0.204 |
| 34 | | | | | 68 | 13 | | 81 | 428 | 0.189 |
| 35 | | | | | | 9 | 1 | 10 | 227 | 0.044 |
| 36-37 | | | | | | | 15 | 15 | 307 | 0.049 |
| Total | 149 | 19 | 258 | 141 | 105 | 23 | 18 | 713 | 4,920 | 0.145 |
| Catch Eaxmined For Tags | 4,734 | 1,919 | 8281 | 2,825 | 2,569 | 746 | 242 | 21,316 | | |
| Marked Fraction | 0.031 | 0.010 | 0.031 | 0.050 | 0.041 | 0.031 | 0.074 | 0.033 | | |
| Total Above-Border Run | 28,100 | 39,674 | 54,309 | 17,573 | 3,154 | 18,876 | 4,877 | 166,563 | | |
| Fish Wheel CPUE Expansion[a] | | | | | | | | 1,035 | | |
| U.S. Personal Use Fishery[b] | | | | | | | | 545 | | |
| Adjusted Total Above-Border Run | | | | | | | | 167,053 | | |
| Aboriginal Fishery[c] | | | | | | | | 120 | | |
| Inriver Test Fishery[d] | | | | | | | | 45 | | |
| 95% Lower C.I. | 24,086 | 2,312 | 43,477 | 12,851 | -6,022 | 7,562 | 2,503 | 136,116 | | |
| 95% Upper C.I. | 32,113 | 77,037 | 65,141 | 22,294 | 12,330 | 30,190 | 7,252 | 197,009 | | |
| Spawning Escapement | 23,366 | 37,755 | 46,028 | 14,748 | 585 | 18,130 | 4,635 | 145,572 | | |

[a] Expansion based on fish wheel CPUE

[b] Tags from personal use catch expanded by inriver commerical marked fraction (3.3%) to obtain total catch

[c] Represents sockeye taken in the aboriginal fishery that were not checked for tags.

[d] 45 sockeye caught by the Canadian test fishery in SW 24 and SW 38 are not included within the above matrix.

Table 5. Historical sockeye salmon above border abundance, above border harvests, and escapement for the Taku River, 1984 to 2006[a].

| Year | Border Escapement | Canadian Commercial and Test Harvest | Canadian Commercial and Test Harvest Rate | Spawning Escapement[b] | Total Run | U.S. Harvest |
|---|---|---|---|---|---|---|
| 1984 | 141,254 | 27,292 | 0.193 | 113,962 | 199,796 | 58,543 |
| 1985 | 123,974 | 14,411 | 0.116 | 109,563 | 197,783 | 73,809 |
| 1986 | 115,045 | 14,939 | 0.130 | 100,106 | 175,980 | 60,934 |
| 1987 | 96,023 | 13,887 | 0.145 | 82,136 | 150,147 | 54,124 |
| 1988 | 92,641 | 12,967 | 0.140 | 79,674 | 118,452 | 25,811 |
| 1989 | 114,068 | 18,805 | 0.165 | 95,263 | 176,873 | 62,805 |
| 1990 | 117,573 | 21,474 | 0.183 | 96,099 | 226,072 | 108,499 |
| 1991 | 154,873 | 25,380 | 0.164 | 129,493 | 258,285 | 103,412 |
| 1992 | 167,376 | 29,862 | 0.178 | 137,514 | 289,814 | 122,438 |
| 1993 | 142,148 | 33,523 | 0.236 | 108,625 | 283,456 | 141,308 |
| 1994 | 131,580 | 29,001 | 0.220 | 102,579 | 228,626 | 97,046 |
| 1995 | 146,450 | 32,711 | 0.223 | 113,739 | 237,458 | 91,008 |
| 1996 | 134,651 | 42,025 | 0.312 | 92,626 | 321,858 | 187,207 |
| 1997 | 95,438 | 24,352 | 0.255 | 71,086 | 173,726 | 78,288 |
| 1998 | 91,548 | 19,038 | 0.208 | 70,715 | 141,041 | 49,493 |
| 1999 | 113,705 | 20,681 | 0.182 | 92,562 | 177,032 | 63,327 |
| 2000 | 115,693 | 27,942 | 0.242 | 87,298 | 247,405 | 131,712 |
| 2001 | 192,269 | 47,988 | 0.250 | 144,071 | 399,277 | 207,008 |
| 2002 | 135,233 | 31,053 | 0.230 | 103,343 | 251,943 | 116,710 |
| 2003 | 200,918 | 32,933 | 0.171 | 167,691 | 337,768 | 156,727 |
| 2004 | 127,949 | 20,346 | 0.159 | 106,691 | 205,866 | 77,917 |
| 2005 | 134,841 | 21,697 | 0.161 | 112,739 | 179,781 | 44,940 |
| 2006 | 167,053 | 21,361 | 0.128 | 145,572 | 231,166 | 64,113 |
| Average(84-05) | 131,148 | 25,559 | 0.194 | 105,344 | 226,505 | 94,660 |
| Maximum(84-05) | 200,918 | 47,988 | 0.312 | 167,691 | 399,277 | 207,008 |
| Minimum(84-05) | 91,548 | 12,967 | 0.116 | 70,715 | 118,452 | 25,811 |
| S.D.(84-05) | 29,178 | 9,041 | 0.048 | 23,586 | 67,427 | 46,409 |
| C.V.(84-05) | 22.2% | 35.4% | 24.8% | 22.4% | 29.8% | 49.0% |

[a] U.S. catch and run size are preliminary.

[b] Spawning escapement includes removals for Canadian Aboriginal and U.S. Personal Use Fisheries.

Table 6. Historical age composition of sockeye salmon passing Canyon Island, Taku River, 1983 to 2006.

| | Sample | Percent By Age Class | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Size | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 2.1 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | 3.2 | 2.4 | 3.3 |
| 1983 | 1,574 | 0.0 | 0.4 | 0.0 | 5.7 | 16.6 | 0.0 | 0.0 | 62.5 | 7.6 | 0.2 | 7.4 | 0.0 | 0.0 | 0.1 |
| 1984 | 1,583 | 0.3 | 2.1 | 1.8 | 11.5 | 15.4 | 0.2 | 0.2 | 57.0 | 9.2 | 0.3 | 2.8 | 0.0 | 0.0 | 0.0 |
| 1985 | 2,437 | 0.3 | 6.0 | 4.1 | 4.0 | 17.2 | 0.4 | 0.4 | 53.8 | 8.7 | 0.7 | 4.8 | 0.0 | 0.1 | 0.0 |
| 1986 | 3,468 | 0.0 | 2.9 | 0.4 | 6.3 | 29.7 | 0.1 | 0.0 | 50.2 | 2.4 | 0.3 | 8.0 | 0.0 | 0.0 | 0.0 |
| 1987 | 2,987 | 0.8 | 1.0 | 5.0 | 12.7 | 17.3 | 2.0 | 0.2 | 54.2 | 2.3 | 0.2 | 4.6 | 0.0 | 0.1 | 0.0 |
| 1988 | 2,450 | 0.3 | 6.5 | 6.2 | 8.0 | 29.8 | 0.3 | 0.0 | 38.7 | 5.6 | 0.2 | 4.6 | 0.1 | 0.0 | 0.0 |
| 1989 | 4,272 | 0.3 | 3.0 | 4.2 | 7.0 | 19.5 | 0.4 | 0.0 | 58.3 | 3.3 | 0.2 | 4.0 | 0.0 | 0.0 | 0.0 |
| 1990 | 4,489 | 0.4 | 4.9 | 3.6 | 4.7 | 26.3 | 0.2 | 0.1 | 48.5 | 6.4 | 0.3 | 4.8 | 0.0 | 0.0 | 0.0 |
| 1991 | 3,594 | 0.1 | 7.9 | 3.3 | 9.5 | 31.4 | 0.8 | 0.1 | 37.7 | 4.9 | 0.3 | 4.4 | 0.0 | 0.0 | 0.0 |
| 1992 | 1,678 | 0.3 | 7.1 | 3.0 | 12.3 | 26.7 | 0.7 | 0.1 | 41.2 | 3.8 | 0.0 | 5.4 | 0.0 | 0.0 | 0.0 |
| 1993 | 2,593 | 0.2 | 4.3 | 3.2 | 11.0 | 15.6 | 0.7 | 0.0 | 55.5 | 4.9 | 0.2 | 4.9 | 0.0 | 0.0 | 0.0 |
| 1994 | 2,789 | 1.0 | 5.1 | 5.2 | 9.4 | 17.3 | 0.1 | 0.0 | 55.2 | 4.0 | 0.1 | 3.0 | 0.0 | 0.0 | 0.0 |
| 1995 | 3,461 | 0.3 | 14.6 | 3.0 | 4.0 | 32.9 | 0.1 | 0.1 | 36.3 | 5.8 | 0.1 | 3.0 | 0.0 | 0.0 | 0.0 |
| 1996 | 2,659 | 0.1 | 3.8 | 1.3 | 18.3 | 17.1 | 0.1 | 0.0 | 51.1 | 5.9 | 0.2 | 2.1 | 0.0 | 0.0 | 0.0 |
| 1997 | 2,787 | 0.1 | 1.4 | 1.8 | 9.4 | 27.4 | 0.2 | 0.2 | 44.5 | 7.3 | 0.1 | 7.6 | 0.1 | 0.0 | 0.0 |
| 1998 | 2,429 | 0.1 | 2.4 | 5.2 | 0.8 | 19.7 | 0.3 | 0.0 | 60.4 | 6.9 | 0.2 | 4.0 | 0.0 | 0.0 | 0.1 |
| 1999 | 2,261 | 0.9 | 4.8 | 6.5 | 2.5 | 39.9 | 1.1 | 0.0 | 30.3 | 12.1 | 0.1 | 1.7 | 0.0 | 0.0 | 0.0 |
| 2000 | 2,305 | 0.0 | 6.3 | 1.2 | 8.6 | 34.5 | 0.2 | 0.0 | 42.3 | 4.6 | 0.1 | 2.0 | 0.0 | 0.0 | 0.0 |
| 2001 | 2,145 | 0.5 | 2.2 | 8.3 | 9.7 | 21.4 | 0.3 | 0.0 | 53.8 | 2.1 | 0.1 | 1.4 | 0.0 | 0.0 | 0.0 |
| 2002 | 2,460 | 0.3 | 8.9 | 2.8 | 2.6 | 37.1 | 0.0 | 0.2 | 43.9 | 2.0 | 0.4 | 1.7 | 0.0 | 0.0 | 0.0 |
| 2003 | 1,982 | 0.4 | 6.8 | 3.5 | 7.6 | 24.9 | 0.1 | 0.1 | 54.4 | 1.1 | 0.2 | 1.2 | 0.0 | 0.0 | 0.0 |
| 2004 | 2,232 | 0.3 | 7.5 | 0.7 | 16.2 | 30.8 | 0.0 | 0.0 | 39.1 | 3.4 | 0.2 | 1.8 | 0.0 | 0.0 | 0.0 |
| 2005 | 1,724 | 0.1 | 4.9 | 0.2 | 15.0 | 24.7 | 0.0 | 0.1 | 50.2 | 2.7 | 0.1 | 2.1 | 0.0 | 0.0 | 0.0 |
| 2006 | 1,862 | 0.2 | 8.2 | 1.4 | 5.5 | 27.2 | 0.1 | 0.0 | 47.3 | 7.5 | 0.4 | 2.3 | 0.0 | 0.0 | 0.0 |
| Average(83-05) | 2,593 | 0.3 | 5.0 | 3.2 | 8.6 | 24.9 | 0.4 | 0.1 | 48.7 | 5.1 | 0.2 | 3.8 | 0.0 | 0.0 | 0.0 |
| SD(83-05) | | 0.3 | 3.1 | 2.2 | 4.5 | 7.4 | 0.5 | 0.1 | 8.6 | 2.7 | 0.1 | 2.0 | 0.0 | 0.0 | 0.0 |
| CV(83-05) | | 88.4% | 63.1% | 67.2% | 52.9% | 29.8% | 127.2% | 133.2% | 17.8% | 53.2% | 67.6% | 53.0% | - | - | - |

Table 7. Migratory timing statistics of sockeye, pink , and chum salmon past the Canyon Island fish wheels, 1984 to 2006. Timing statistics in 1984 were based on catch, all other years were based on fish wheel CPUE.

| | Species | | | | | |
|---|---|---|---|---|---|---|
| | Sockeye | | Pink | | Chum | |
| Year | Mean Date | S.D. | Mean Date | S.D. | Mean Date | S.D. |
| 1984 | 7/23 | 17.6 | 7/19 | 9.3 | 8/14 | 12.8 |
| 1985 | 7/24 | 18.1 | 7/19 | 8.5 | 9/8 | 11.8 |
| 1986 | 7/16 | 14.2 | 7/27 | 5.5 | 8/7 | 11.3 |
| 1987 | 7/24 | 15.8 | 7/19 | 9.3 | 9/8 | 10.5 |
| 1988 | 7/19 | 19.5 | 7/21 | 9.6 | 8/31 | 12.5 |
| 1989 | 7/14 | 20.1 | 7/18 | 7.8 | 9/13 | 15.9 |
| 1990 | 7/20 | 18.8 | 7/23 | 8.9 | 8/30 | 15.1 |
| 1991 | 7/24 | 20.6 | 7/23 | 6.6 | 9/11 | 13.0 |
| 1992 | 7/25 | 14.4 | 7/24 | 7.2 | 8/28 | 13.5 |
| 1993 | 7/21 | 16.9 | 7/15 | 8.9 | 9/7 | 14.4 |
| 1994 | 7/23 | 20.2 | 7/24 | 10.1 | 9/2 | 15.6 |
| 1995 | 7/22 | 22.0 | 7/14 | 7.8 | 9/3 | 9.8 |
| 1996 | 7/21 | 18.9 | 7/23 | 6.5 | 8/27 | 14.0 |
| 1997 | 7/26 | 23.9 | 7/14 | 10.0 | 9/5 | 11.6 |
| 1998 | 7/18 | 21.1 | 7/24 | 7.9 | 9/4 | 8.7 |
| 1999 | 7/18 | 19.5 | 7/24 | 7.9 | 9/3 | 14.5 |
| 2000 | 7/17 | 20.8 | 7/25 | 8.7 | 8/30 | 16.9 |
| 2001 | 7/20 | 18.1 | 7/18 | 8.4 | 9/2 | 13.4 |
| 2002 | 7/9 | 18.6 | 7/20 | 7.6 | 8/31 | 12.3 |
| 2003 | 7/19 | 16.5 | 7/15 | 7.8 | 9/3 | 12.2 |
| 2004 | 7/18 | 19.5 | 7/24 | 8.3 | 9/4 | 19.2 |
| 2005 | 7/20 | 20.5 | 7/15 | 7.7 | 9/5 | 16.4 |
| 2006 | 8/4 | 18.6 | 7/26 | 7.8 | 9/4 | 13.2 |
| Average(84-05) | 7/20 | 18.9 | 7/20 | 8.2 | 9/1 | 13.4 |

Table 8. Weekly and cumulative proportions of three individual sockeye salmon stocks passing Canyon Island in 2006, based on spawning ground tag recoveries expanded by fish wheel indices (fish wheel CPUE).

| | | | Kuthai Lake | | King Salmon Lake | | Little Trapper Lake | | Tatsamenie Lake | |
|---|---|---|---|---|---|---|---|---|---|---|
| Statistical Week | Week Starting | Week Ending | Weekly Proportion | Cumul. Proportion | Weekly Proportion | Cumul. Proportion | Weekly Proportion | Cumul. Proportion | Weekly Proportion | Cumul. Proportion |
| 22 | 28-May | 3-Jun | | | | | | | | |
| 23 | 4-Jun | 10-Jun | | | | | | | | |
| 24 | 11-Jun | 17-Jun | 0.04 | 0.04 | | | | | | |
| 25 | 18-Jun | 24-Jun | 0.41 | 0.45 | | | 0.00 | 0.00 | | |
| 26 | 25-Jun | 1-Jul | 0.22 | 0.67 | 0.09 | 0.09 | 0.02 | 0.02 | | |
| 27 | 2-Jul | 8-Jul | 0.27 | 0.94 | 0.38 | 0.47 | 0.08 | 0.11 | | |
| 28 | 9-Jul | 15-Jul | 0.04 | 0.97 | 0.28 | 0.74 | 0.21 | 0.32 | 0.01 | 0.01 |
| 29 | 16-Jul | 22-Jul | 0.00 | 0.97 | 0.13 | 0.88 | 0.16 | 0.48 | 0.15 | 0.16 |
| 30 | 23-Jul | 29-Jul | 0.03 | 1.00 | 0.08 | 0.96 | 0.32 | 0.80 | 0.12 | 0.29 |
| 31 | 30-Jul | 5-Aug | | | 0.04 | 1.00 | 0.14 | 0.94 | 0.11 | 0.39 |
| 32 | 6-Aug | 12-Aug | | | | | 0.05 | 0.98 | 0.16 | 0.55 |
| 33 | 13-Aug | 19-Aug | | | | | 0.02 | 1.00 | 0.15 | 0.70 |
| 34 | 20-Aug | 26-Aug | | | | | | | 0.09 | 0.78 |
| 35 | 27-Aug | 2-Sep | | | | | | | 0.15 | 0.93 |
| 36 | 3-Sep | 9-Sep | | | | | | | 0.06 | 0.98 |
| 37 | 10-Sep | 16-Sep | | | | | | | 0.02 | 1.00 |

Table 9. Inriver migration timing for four Taku River sockeye salmon stocks, 2006.

| Stock | Week | Travel Time | SD | SE | N | 95% C.I. |
|---|---|---|---|---|---|---|
| Kuthai | 24 | 68.0 | | | 1.0 | |
| | 25 | 53.5 | 3.5 | 2.5 | 2.0 | 4.90 |
| | 26 | 44.0 | 8.4 | 4.2 | 4.0 | 8.20 |
| | 27 | 38.0 | 8.7 | 3.9 | 5.0 | 7.64 |
| | 28 | 44.0 | | | 1.0 | |
| | 29 | | | | | |
| | 30 | 24.0 | | | 1.0 | |
| | Average | 43.5 | 12.0 | | 14.0 | |
| King Salmon | 26 | 25.2 | 2.6 | | 5.0 | 2.3 |
| | 27 | 24.0 | 6.6 | 1.6 | 17.0 | 3.1 |
| | 28 | 26.4 | 3.3 | 0.9 | 14.0 | 1.7 |
| | 29 | 28.8 | 5.0 | 2.0 | 6.0 | 4.0 |
| | 30 | 18.0 | 2.8 | 1.4 | 4.0 | 2.77 |
| | Average | 25.0 | 5.4 | | 46 | |
| L. Trapper | 25 | 41.0 | | | 2.0 | |
| | 26 | 38.8 | 3.7 | 1.2 | 9.0 | 2.42 |
| | 27 | 31.4 | 2.9 | 0.5 | 33.0 | 0.97 |
| | 28 | 27.7 | 3.5 | 0.4 | 90.0 | 0.73 |
| | 29 | 24.9 | 4.4 | 0.6 | 62.0 | 1.10 |
| | 30 | 20.4 | 4.2 | 0.4 | 137.0 | 0.70 |
| | 31 | 20.7 | 4.0 | 0.5 | 57.0 | 1.03 |
| | 32 | 18.9 | 3.5 | 0.9 | 16.0 | 1.71 |
| | 33 | 16.2 | 1.2 | 0.5 | 6.0 | 0.94 |
| | Average | 24.0 | 6.0 | | 412 | |
| Tatsamenie | 28 | 32.3 | 1.3 | 0.6 | 4.0 | 1.23 |
| | 29 | 30.3 | 3.8 | 1.0 | 15.0 | 1.94 |
| | 30 | 26.0 | 5.0 | 0.6 | 66.0 | 1.20 |
| | 31 | 28.8 | 6.3 | 0.6 | 114.0 | 1.16 |
| | 32 | 29.2 | 7.4 | 0.8 | 79.0 | 1.62 |
| | 33 | 28.8 | 5.6 | 0.7 | 61.0 | 1.42 |
| | 34 | 27.7 | 3.3 | 0.5 | 52.0 | 0.90 |
| | 35 | 25.8 | 3.9 | 0.5 | 51.0 | 1.06 |
| | 36 | 19.3 | 3.1 | 0.4 | 51.0 | 0.84 |
| | 37 | 18.3 | 2.8 | 0.7 | 16.0 | 1.37 |
| | Average | 26.9 | 6.3 | | 509 | |

Table 10. Historical length (MEF) at age composition of sockeye salmon passing Canyon Island, Taku River, 2006

| | Sample | Length At Age Class | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Size | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 2.1 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | 2.4 | 3.2 | 3.3 |
| 1983 | 1,573 | | 447 | | 577 | 469 | | | 578 | 522 | 618 | 582 | | | |
| 1984 | 1,572 | 297 | 445 | 315 | 575 | 476 | 320 | 610 | 576 | 511 | 580 | 589 | | | |
| 1985 | 2,422 | 309 | 457 | 337 | 572 | 486 | 372 | 609 | 579 | 510 | 597 | 590 | 625 | | |
| 1986 | 3,362 | | 449 | 305 | 584 | 493 | 310 | | 582 | 491 | 598 | 581 | | | |
| 1987 | 2,923 | 316 | 460 | 319 | 587 | 463 | 329 | 610 | 592 | 494 | 565 | 592 | 650 | | |
| 1988 | 2,422 | 313 | 443 | 319 | 576 | 482 | 324 | | 578 | 480 | 600 | 578 | | | |
| 1989 | 4,254 | 315 | 442 | 340 | 578 | 468 | 334 | | 591 | 488 | 619 | 589 | | | |
| 1990 | 4,432 | 316 | 427 | 326 | 570 | 470 | 322 | 612 | 574 | 485 | 578 | 576 | 555 | | |
| 1991 | 3,581 | 313 | 442 | 322 | 561 | 463 | 321 | 610 | 569 | 482 | 602 | 572 | | | |
| 1992 | 1,667 | 351 | 431 | 328 | 564 | 467 | 345 | 585 | 568 | 482 | | 569 | | | |
| 1993 | 2,582 | 316 | 440 | 327 | 555 | 470 | 333 | | 558 | 507 | 573 | 556 | | | |
| 1994 | 2,784 | 329 | 431 | 327 | 559 | 455 | 325 | | 557 | 497 | 585 | 561 | | | |
| 1995 | 3,435 | 324 | 455 | 329 | 563 | 481 | 357 | 625 | 562 | 509 | 630 | 569 | | | |
| 1996 | 2,649 | 300 | 472 | 323 | 581 | 489 | 338 | | 583 | 524 | 607 | 587 | | | |
| 1997 | 2,770 | 310 | 461 | 332 | 579 | 503 | 339 | 581 | 580 | 514 | 585 | 574 | | 490 | |
| 1998 | 2,427 | 313 | 445 | 327 | 578 | 483 | 346 | | 569 | 510 | 579 | 575 | | | 555 |
| 1999 | 2,251 | 328 | 446 | 317 | 565 | 485 | 326 | 555 | 568 | 515 | 612 | 575 | | 540 | |
| 2000 | 2,300 | 310 | 460 | 324 | 583 | 503 | 329 | | 582 | 508 | 610 | 581 | | | |
| 2001 | 2,140 | 308 | 449 | 324 | 581 | 498 | 340 | 600 | 586 | 519 | 572 | 567 | | | |
| 2002 | 2,453 | 299 | 437 | 334 | 583 | 473 | 320 | 614 | 589 | 522 | 609 | 595 | | | |
| 2003 | 1,966 | 336 | 458 | 340 | 570 | 475 | 340 | 570 | 578 | 492 | 582 | 593 | | | |
| 2004 | 2,231 | 338 | 463 | 332 | 580 | 500 | | 585 | 570 | 505 | 588 | 591 | | | |
| 2005 | 1,842 | 345 | 457 | 331 | 564 | 472 | | 600 | 563 | 490 | 585 | 563 | | | |
| 2006 | 1,858 | 325 | 450 | 334 | 564 | 484 | | | 570 | 515 | 574 | 565 | | | |
| Average(83-05) | 2,610 | 318 | 449 | 326 | 573 | 479 | 334 | 598 | 575 | 502 | 594 | 578 | 610 | 515 | 555 |
| SD(83-05) | | 14.7 | 11.5 | 8.3 | 9.1 | 13.6 | 14.4 | 19.6 | 10.0 | 14.2 | 17.5 | 11.1 | 49.2 | 35.4 | |
| CV(83-05) | | 4.6% | 2.6% | 2.6% | 1.6% | 2.8% | 4.3% | 3.3% | 1.7% | 2.8% | 3.0% | 1.9% | 8.1% | | - |

Table 11. Historical age composition of chum salmon passing Canyon Island, Taku River, 2006.

| Year | Sample Size | Percent by Age Class 0.2 | 0.3 | 0.4 | 0.5 | 0.6 |
|---|---|---|---|---|---|---|
| 1983 | 24 | 8.3 | 45.8 | 54.2 | 8.3 | 0.0 |
| 1984 | 280 | 2.5 | 85.0 | 13.6 | 0.0 | 0.0 |
| 1985 | 728 | 0.4 | 68.1 | 31.9 | 0.0 | 0.0 |
| 1986 | 64 | 0.0 | 51.6 | 51.6 | 0.0 | 0.0 |
| 1987 | 1075 | 1.0 | 48.6 | 48.8 | 2.0 | 0.0 |
| 1988 | 853 | 0.0 | 30.4 | 68.5 | 1.5 | 0.0 |
| 1989 | 574 | 0.5 | 77.4 | 19.5 | 3.1 | 0.3 |
| 1990 | 636 | 0.3 | 23.0 | 76.7 | 0.5 | 0.3 |
| 1991 | missing data | | | | | |
| 1992 | 163 | 0.0 | 56.4 | 37.4 | 8.0 | 0.0 |
| 1993 | 278 | 0.7 | 22.3 | 75.9 | 2.5 | 0.0 |
| 1994 | 310 | 0.6 | 32.6 | 63.2 | 4.8 | 0.0 |
| 1995 | 192 | 2.1 | 19.8 | 75.5 | 4.7 | 0.0 |
| 1996 | 351 | 1.1 | 68.4 | 23.4 | 7.1 | 0.0 |
| 1997 | 425 | 0.9 | 56.2 | 42.4 | 0.5 | 0.0 |
| 1998 | 152 | 0.7 | 27.6 | 67.8 | 3.9 | 0.0 |
| 1999 | 151 | 2.0 | 84.1 | 13.9 | 0.0 | 0.0 |
| 2000 | 273 | 0.0 | 75.5 | 24.5 | 0.0 | 0.0 |
| 2001 | 207 | 1.0 | 44.9 | 54.1 | 0.0 | 0.0 |
| 2002 | 144 | 0.7 | 45.8 | 53.5 | 0.0 | 0.0 |
| 2003 | 230 | 2.7 | 72.9 | 23.1 | 1.3 | 0.0 |
| 2004 | 305 | 0.2 | 67.8 | 31.9 | 0.1 | 0.0 |
| 2005 | 198 | 1.0 | 54.0 | 44.9 | 0.0 | 0.0 |
| 2006 | 375 | 1.1 | 66.7 | 31.2 | 1.1 | 0.0 |
| Average (83-05) | 346 | 1.2 | 52.6 | 45.3 | 2.2 | 0.0 |
| SD (83-05) | | 1.8 | 20.6 | 20.7 | 2.8 | 0.1 |
| CV (83-05) | | 0.7 | 2.6 | 2.2 | 0.8 | 0.3 |

Table 12. Historical length (MEF) at age composition of chum salmon passing Canyon Island, Taku River, 1983 to 2006.

| Year | Sample Size | Length at Age Class 0.2 | 0.3 | 0.4 | 0.5 | 0.6 |
|---|---|---|---|---|---|---|
| 1983 | 24 | 599 | 651 | 658 | 714 | |
| 1984 | 279 | 615 | 630 | 683 | | |
| 1985 | 727 | 592 | 658 | 680 | | |
| 1986 | 63 | | 640 | 666 | | |
| 1987 | 1,061 | 579 | 642 | 668 | 668 | |
| 1988 | 845 | | 642 | 675 | 690 | |
| 1989 | 571 | 587 | 628 | 669 | 678 | 680 |
| 1990 | 634 | 655 | 629 | 666 | 690 | 600 |
| 1991 | missing data | | | | | |
| 1992 | 163 | | 614 | 656 | 667 | |
| 1993 | 277 | 510 | 598 | 638 | 616 | |
| 1994 | 310 | 660 | 610 | 645 | 660 | |
| 1995 | 192 | 556 | 632 | 652 | 663 | |
| 1996 | 350 | 595 | 642 | 662 | 684 | |
| 1997 | 424 | 651 | 640 | 673 | 693 | |
| 1998 | 151 | 600 | 634 | 662 | 703 | |
| 1999 | 149 | 615 | 644 | 664 | | |
| 2000 | 273 | | 650 | 680 | | |
| 2001 | 207 | 528 | 623 | 665 | | |
| 2002 | 144 | 610 | 649 | 669 | | |
| 2003 | 227 | 564 | 612 | 644 | 650 | |
| 2004 | 634 | 633 | 623 | 657 | 660 | |
| 2005 | 250 | 605 | 646 | 665 | | |
| 2006 | 374 | 615 | 647 | 681 | 692 | |
| Average (83-05) | 362 | 597 | 634 | 664 | 674 | 640 |
| SD (83-05) | | 40.6 | 15.3 | 11.7 | 24.8 | 56.6 |
| CV (83-05) | | 6.8% | 2.4% | 1.8% | 3.7% | 8.8% |

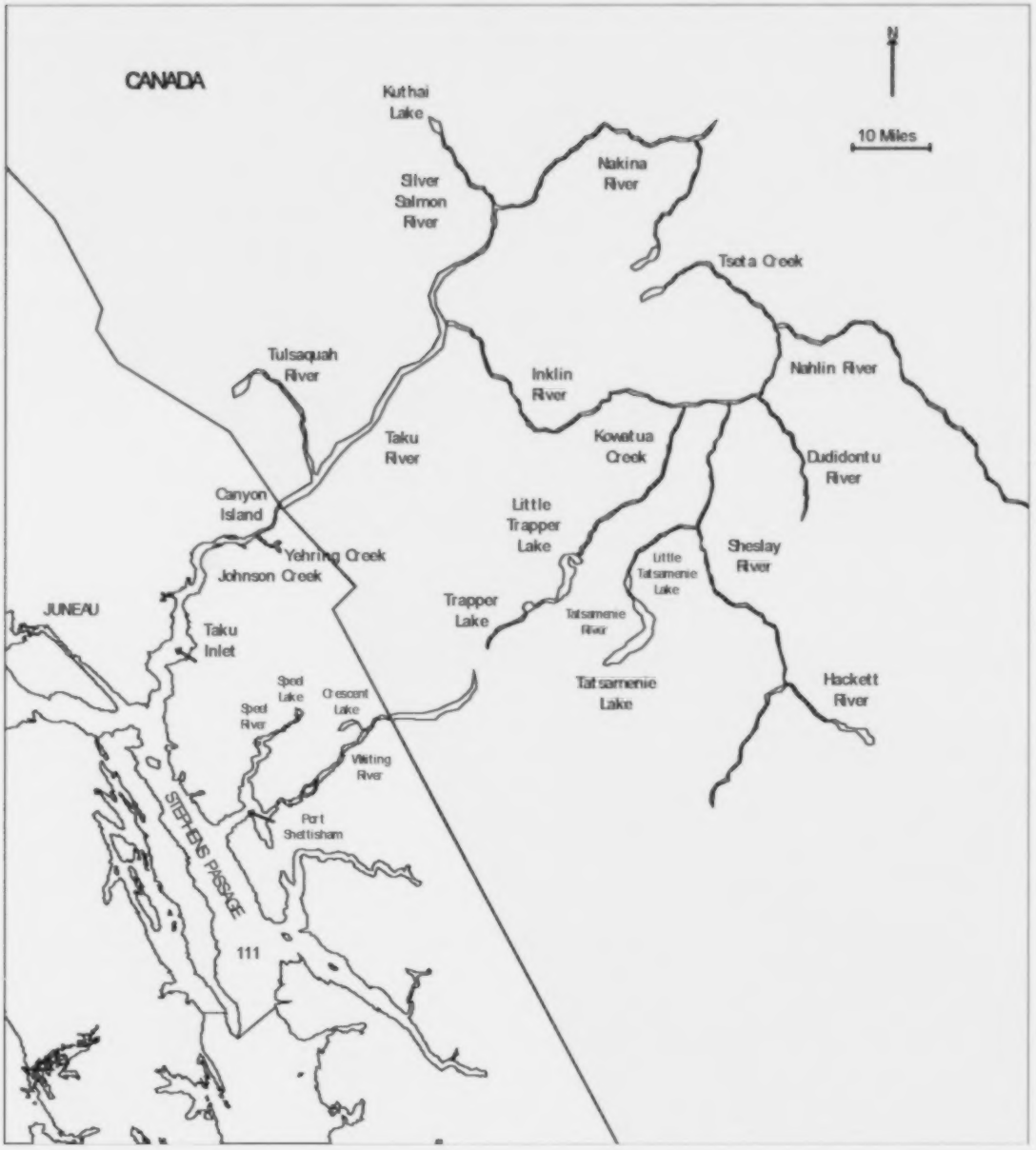



Figure 1. Taku River drainage, with location of tagging sites.

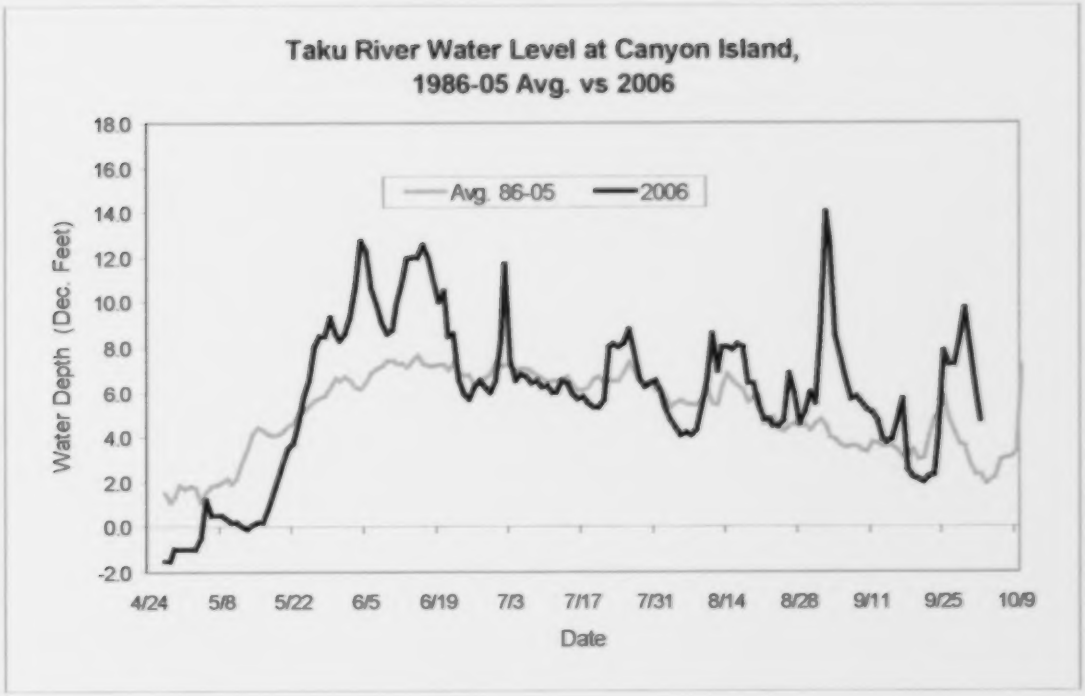
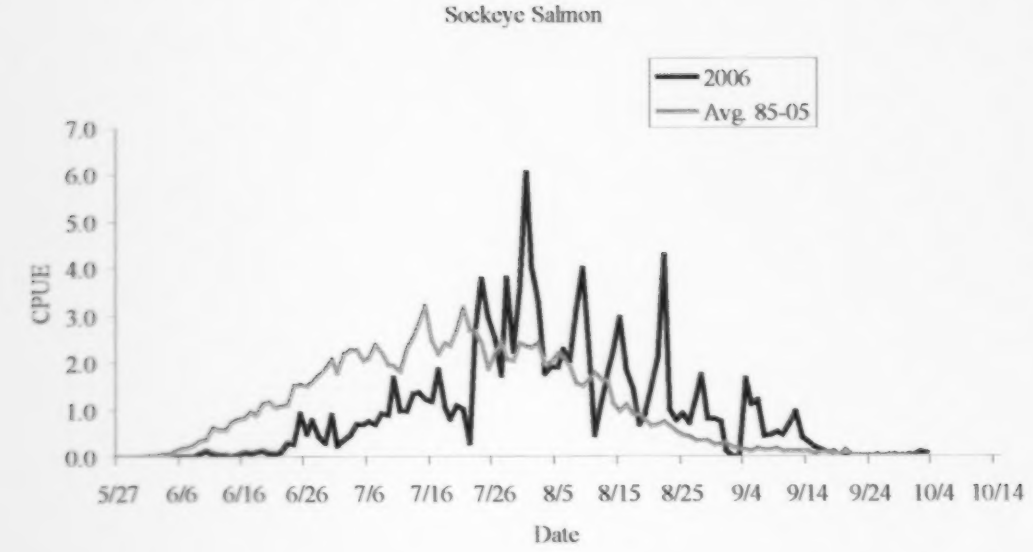



Figure 2. Water levels at Canyon Island, Taku River, 2006 vs. 1986-2005 average.



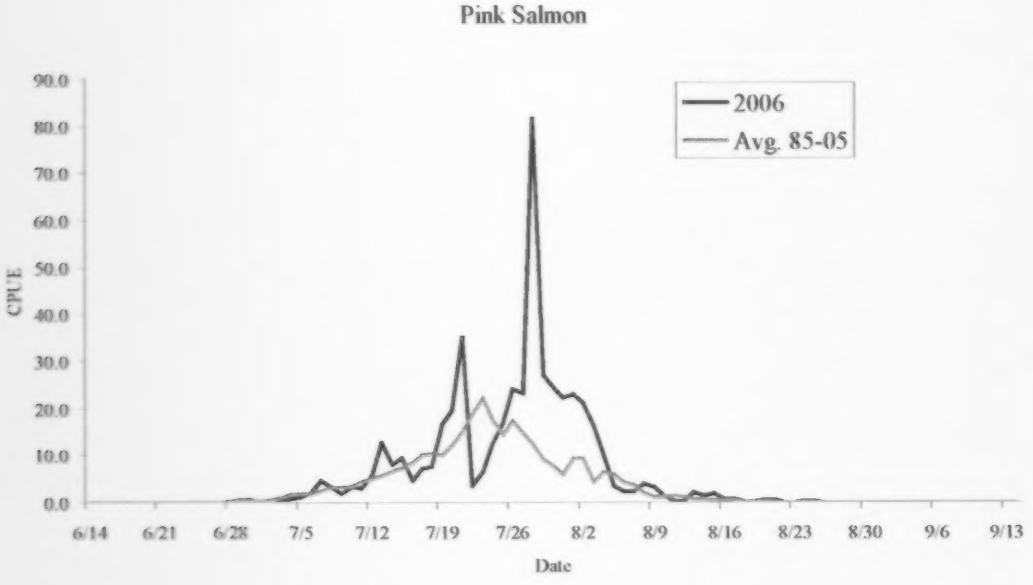
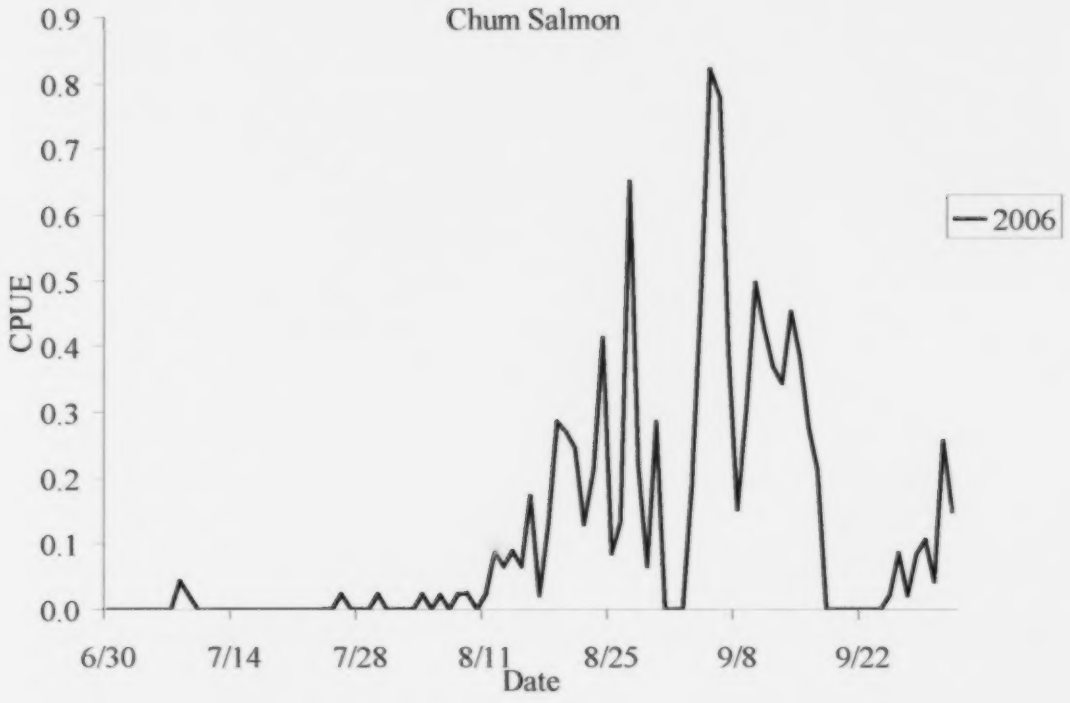




Figure 3. Fish wheel CPUE for sockeye, pink, and chum salmon at Canyon Island, 2006.

Figure 3. continued



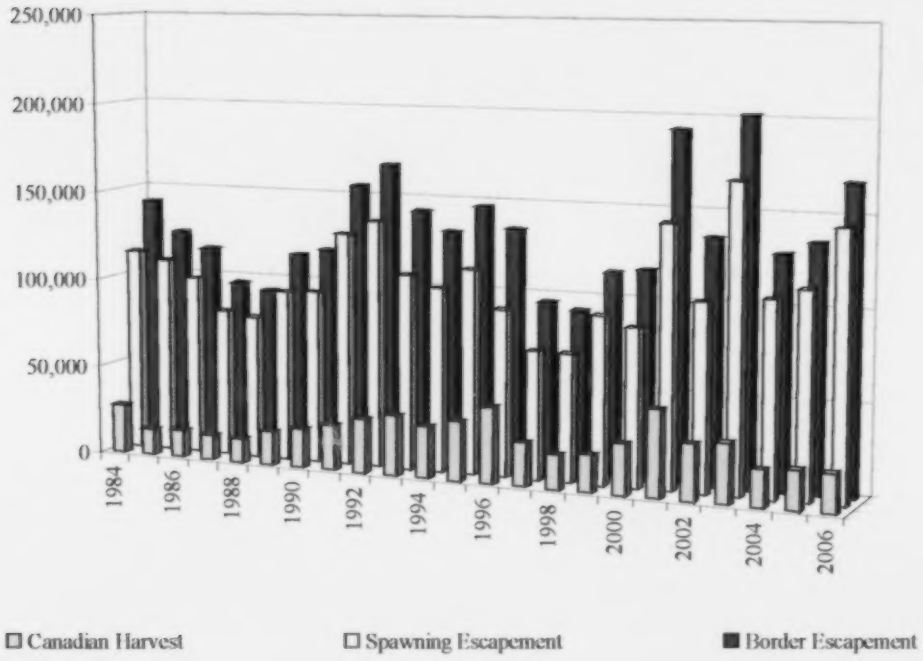



Figure 4. Historical sockeye mark-recapture abundance estimates above the U.S./Canada border including Canadian inriver harvests and escapements for Taku River sockeye, 1984-2006.

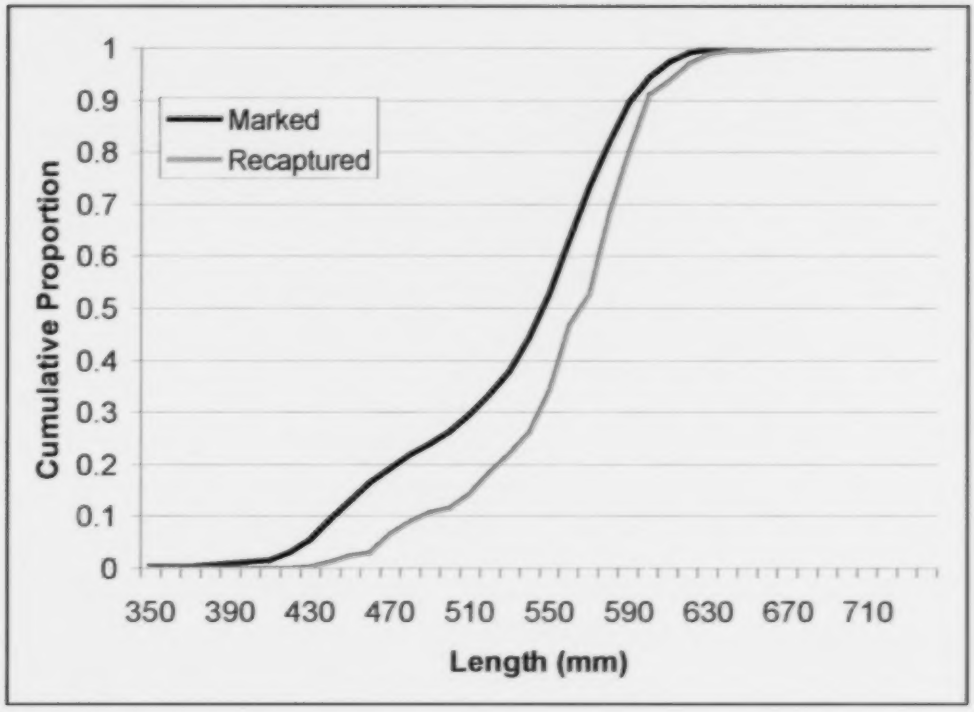



Figure 5. Cumulative Distribution Functions (CDF) of MEF lengths of sockeye salmon tagged at Canyon Island and of tagged sockeye salmon recovered in the Canadian commercial fishery, 2006.

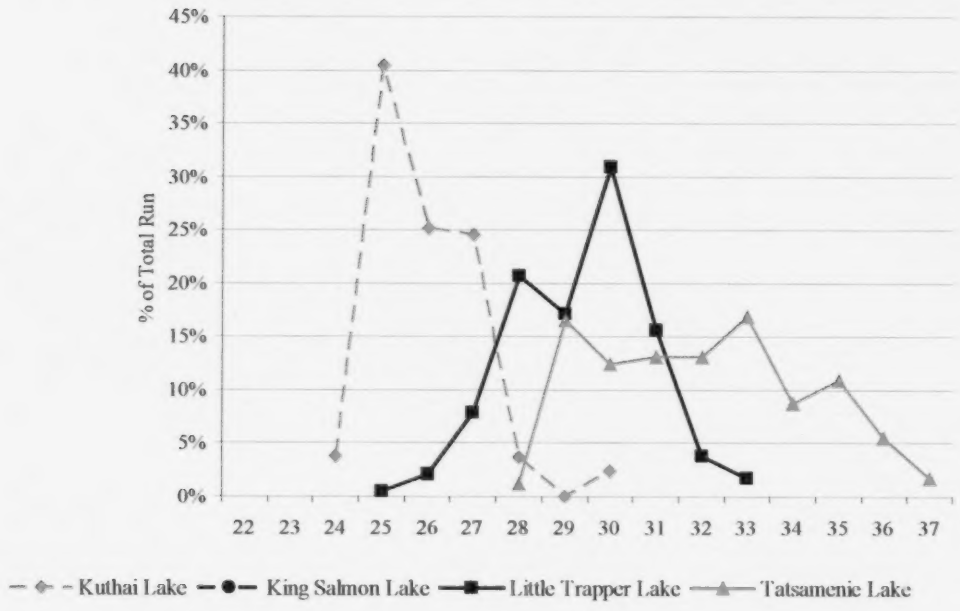
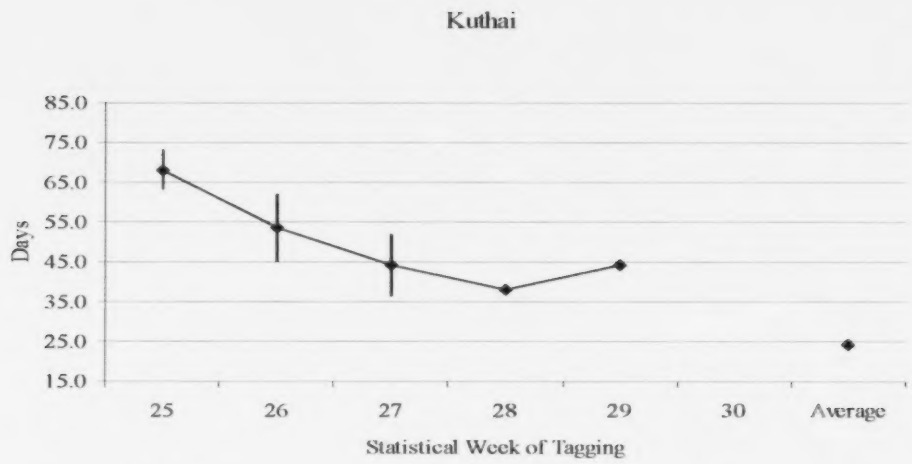



Figure 6. Run timing of four sockeye salmon stock groups passing Canyon Island, 2006.



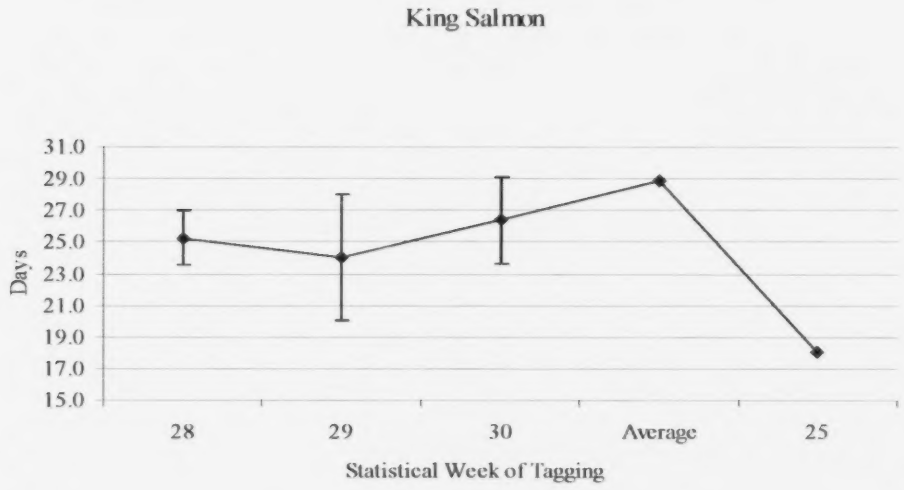
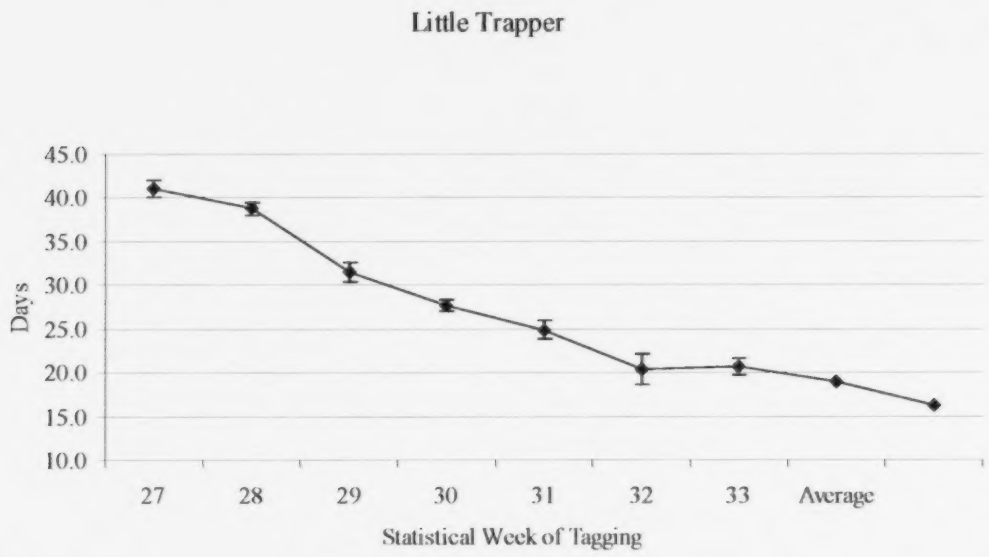




Figure 7. Mean travel times (and 95% confidence intervals) for tagged sockeye salmon between Canyon Island and four upriver locations, 2006.



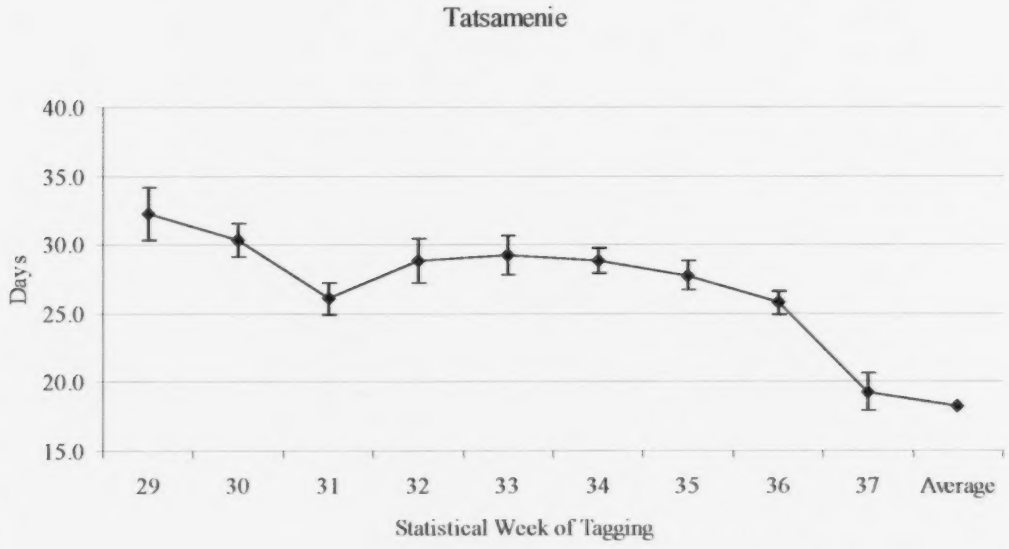




Figure 7 (cont'd). Mean travel times (and 95% confidence intervals) for tagged sockeye salmon between Canyon Island and four upriver locations, 2006.

Appendix A. Inclusive dates for statistical weeks, 2006.

**2006 Statistical Week Calendar**

| Stat Week | From | Through | Stat Week | From | Through |
|---|---|---|---|---|---|
| 1 | 1-Jan | 7-Jan | 28 | 9-Jul | 15-Jul |
| 2 | 8-Jan | 14-Jan | 29 | 16-Jul | 22-Jul |
| 3 | 15-Jan | 21-Jan | 30 | 23-Jul | 29-Jul |
| 4 | 22-Jan | 28-Jan | 31 | 30-Jul | 5-Aug |
| 5 | 29-Jan | 4-Feb | 32 | 6-Aug | 12-Aug |
| 6 | 5-Feb | 11-Feb | 33 | 13-Aug | 19-Aug |
| 7 | 12-Feb | 18-Feb | 34 | 20-Aug | 26-Aug |
| 8 | 19-Feb | 25-Feb | 35 | 27-Aug | 2-Sep |
| 9 | 26-Feb | 4-Mar | 36 | 3-Sep | 9-Sep |
| 10 | 5-Mar | 11-Mar | 37 | 10-Sep | 16-Sep |
| 11 | 12-Mar | 18-Mar | 38 | 17-Sep | 23-Sep |
| 12 | 19-Mar | 25-Mar | 39 | 24-Sep | 30-Sep |
| 13 | 26-Mar | 1-Apr | 40 | 1-Oct | 7-Oct |
| 14 | 2-Apr | 8-Apr | 41 | 8-Oct | 14-Oct |
| 15 | 9-Apr | 15-Apr | 42 | 15-Oct | 21-Oct |
| 16 | 16-Apr | 22-Apr | 43 | 22-Oct | 28-Oct |
| 17 | 23-Apr | 29-Apr | 44 | 29-Oct | 4-Nov |
| 18 | 30-Apr | 6-May | 45 | 5-Nov | 11-Nov |
| 19 | 7-May | 13-May | 46 | 12-Nov | 18-Nov |
| 20 | 14-May | 20-May | 47 | 19-Nov | 25-Nov |
| 21 | 21-May | 27-May | 48 | 26-Nov | 2-Dec |
| 22 | 28-May | 3-Jun | 49 | 3-Dec | 9-Dec |
| 23 | 4-Jun | 10-Jun | 50 | 10-Dec | 16-Dec |
| 24 | 11-Jun | 17-Jun | 51 | 17-Dec | 23-Dec |
| 25 | 18-Jun | 24-Jun | 52 | 24-Dec | 30-Dec |
| 26 | 25-Jun | 1-Jul | 53 | 31-Dec | |
| 27 | 2-Jul | 8-Jul | 54 | | |

Appendix B.1. Catches, number tagged, and CPUE of sockeye salmon in the fish wheels at Canyon Island, 2006.

| Stat | | Temp. | Level | FW Catches | | FW Tagged | | | CPUE | |
|---|---|---|---|---|---|---|---|---|---|---|
| Week | Date | (°C) | (dec.ft.) | Daily | Cum. | Daily | Cum. | Daily | Cum. | Cum. Prop |
| 20 | 20-May | 5.5 | 2.8 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 21 | 21-May | 5.5 | 3.5 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 21 | 22-May | 5.5 | 3.7 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 21 | 23-May | 5.8 | 4.6 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 21 | 24-May | 4.6 | 5.8 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 21 | 25-May | 5.0 | 6.5 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 21 | 26-May | 5.5 | 8.0 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 21 | 27-May | 6.0 | 8.5 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 22 | 28-May | 6.0 | 8.5 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 22 | 29-May | 5.8 | 9.3 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 22 | 30-May | 6.0 | 8.6 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 22 | 31-May | 6.0 | 8.3 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 22 | 1-Jun | 7.0 | 8.6 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 22 | 2-Jun | 7.0 | 9.3 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 22 | 3-Jun | 6.4 | 10.6 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 23 | 4-Jun | 6.0 | 12.7 | | 0 | | 0 | 0.000 | 0.000 | 0.0000 |
| 23 | 5-Jun | 6.0 | 12.3 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 23 | 6-Jun | 7.2 | 10.6 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 23 | 7-Jun | 7.3 | 9.9 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 23 | 8-Jun | 7.3 | 9.1 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.0000 |
| 23 | 9-Jun | 7.4 | 8.6 | 3 | 3 | 2 | 2 | 0.064 | 0.064 | 0.0005 |
| 23 | 10-Jun | 8.5 | 8.8 | 5 | 8 | 4 | 6 | 0.107 | 0.171 | 0.0014 |
| 24 | 11-Jun | 8.5 | 9.9 | 3 | 11 | 3 | 9 | 0.063 | 0.234 | 0.0020 |
| 24 | 12-Jun | 8.8 | 10.8 | 2 | 13 | 2 | 11 | 0.042 | 0.276 | 0.0023 |
| 24 | 13-Jun | 9.0 | 11.9 | 1 | 14 | 1 | 12 | 0.021 | 0.297 | 0.0025 |
| 24 | 14-Jun | 9.0 | 12.0 | 0 | 14 | 0 | 12 | 0.000 | 0.297 | 0.0025 |
| 24 | 15-Jun | 9.0 | 12.0 | 2 | 16 | 2 | 14 | 0.042 | 0.339 | 0.0028 |
| 24 | 16-Jun | 7.9 | 12.5 | 3 | 19 | 3 | 17 | 0.089 | 0.428 | 0.0036 |
| 24 | 17-Jun | 8.3 | 12.0 | 3 | 22 | 3 | 20 | 0.063 | 0.491 | 0.0041 |
| 25 | 18-Jun | 8.1 | 11.0 | 4 | 26 | 4 | 24 | 0.084 | 0.575 | 0.0048 |
| 25 | 19-Jun | 7.6 | 10.0 | 6 | 32 | 6 | 30 | 0.127 | 0.702 | 0.0059 |
| 25 | 20-Jun | 5.7 | 10.5 | 2 | 34 | 2 | 32 | 0.044 | 0.745 | 0.0062 |
| 25 | 21-Jun | 7.9 | 8.5 | 3 | 37 | 3 | 35 | 0.063 | 0.808 | 0.0067 |
| 25 | 22-Jun | 7.3 | 8.6 | 4 | 41 | 4 | 39 | 0.085 | 0.893 | 0.0074 |
| 25 | 23-Jun | 8.6 | 6.6 | 13 | 54 | 13 | 52 | 0.278 | 1.170 | 0.0098 |
| 25 | 24-Jun | 7.2 | 5.9 | 11 | 65 | 10 | 62 | 0.255 | 1.425 | 0.0119 |
| 26 | 25-Jun | 8.0 | 5.7 | 42 | 107 | 40 | 102 | 0.903 | 2.328 | 0.0194 |
| 26 | 26-Jun | 8.4 | 6.2 | 23 | 130 | 21 | 123 | 0.488 | 2.816 | 0.0235 |
| 26 | 27-Jun | 8.7 | 6.5 | 36 | 166 | 33 | 156 | 0.767 | 3.583 | 0.0299 |

Appendix B.1 (cont'd). Catches, number tagged, and CPUE of sockeye salmon in the fish wheels at Canyon Island, 2006.

| Stat | | Temp. | Level | FW Catches | | FW Tagged | | | CPUE | |
|---|---|---|---|---|---|---|---|---|---|---|
| Week | Date | (°C) | (dec.ft.) | Daily | Cum. | Daily | Cum. | Daily | Cum. | Cum. Prop |
| 26 | 28-Jun | 7.8 | 6.2 | 20 | 186 | 18 | 174 | 0.422 | 4.006 | 0.0334 |
| 26 | 29-Jun | 8.2 | 6.0 | 14 | 200 | 13 | 187 | 0.295 | 4.301 | 0.0359 |
| 26 | 30-Jun | 7.7 | 6.5 | 41 | 241 | 40 | 227 | 0.869 | 5.170 | 0.0431 |
| 26 | 1-Jul | 6.2 | 8.3 | 11 | 252 | 10 | 237 | 0.232 | 5.402 | 0.0450 |
| 27 | 2-Jul | 4.5 | 11.7 | 12 | 264 | 12 | 249 | 0.336 | 5.738 | 0.0478 |
| 27 | 3-Jul | 8.0 | 7.4 | 21 | 285 | 21 | 270 | 0.443 | 6.181 | 0.0515 |
| 27 | 4-Jul | 8.4 | 6.5 | 32 | 317 | 31 | 301 | 0.682 | 6.863 | 0.0572 |
| 27 | 5-Jul | 9.7 | 6.8 | 32 | 349 | 29 | 330 | 0.677 | 7.540 | 0.0629 |
| 27 | 6-Jul | 9.6 | 6.7 | 34 | 383 | 31 | 361 | 0.725 | 8.265 | 0.0689 |
| 27 | 7-Jul | 9.0 | 6.4 | 32 | 415 | 31 | 392 | 0.684 | 8.949 | 0.0746 |
| 27 | 8-Jul | 9.2 | 6.5 | 42 | 457 | 39 | 431 | 0.895 | 9.844 | 0.0821 |
| 28 | 9-Jul | 9.0 | 6.2 | 41 | 498 | 37 | 468 | 0.874 | 10.718 | 0.0894 |
| 28 | 10-Jul | 8.4 | 6.3 | 77 | 575 | 74 | 542 | 1.665 | 12.383 | 0.1033 |
| 28 | 11-Jul | 9.2 | 6.0 | 44 | 619 | 43 | 585 | 0.950 | 13.333 | 0.1112 |
| 28 | 12-Jul | 10.0 | 6.0 | 44 | 663 | 42 | 627 | 0.955 | 14.287 | 0.1191 |
| 28 | 13-Jul | 9.2 | 6.5 | 61 | 724 | 57 | 684 | 1.324 | 15.611 | 0.1302 |
| 28 | 14-Jul | 8.1 | 6.4 | 63 | 787 | 59 | 743 | 1.357 | 16.968 | 0.1415 |
| 28 | 15-Jul | 8.9 | 5.9 | 56 | 843 | 50 | 793 | 1.211 | 18.179 | 0.1516 |
| 29 | 16-Jul | 9.0 | 5.7 | 54 | 897 | 47 | 840 | 1.159 | 19.338 | 0.1613 |
| 29 | 17-Jul | 9.6 | 5.8 | 85 | 982 | 78 | 918 | 1.845 | 21.183 | 0.1766 |
| 29 | 18-Jul | 9.3 | 5.5 | 48 | 1030 | 45 | 963 | 1.032 | 22.215 | 0.1853 |
| 29 | 19-Jul | 9.3 | 5.3 | 37 | 1067 | 33 | 996 | 0.798 | 23.013 | 0.1919 |
| 29 | 20-Jul | 9.4 | 5.3 | 49 | 1116 | 44 | 1040 | 1.065 | 24.079 | 0.2008 |
| 29 | 21-Jul | 9.1 | 5.6 | 46 | 1162 | 34 | 1074 | 1.000 | 25.079 | 0.2091 |
| 29 | 22-Jul | 8.1 | 8.0 | 13 | 1175 | 13 | 1087 | 0.276 | 25.354 | 0.2114 |
| 30 | 23-Jul | 9.1 | 8.1 | 120 | 1295 | 116 | 1203 | 2.637 | 27.991 | 0.2334 |
| 30 | 24-Jul | 9.0 | 8.0 | 170 | 1465 | 162 | 1365 | 3.750 | 31.742 | 0.2647 |
| 30 | 25-Jul | 7.8 | 8.2 | 133 | 1598 | 130 | 1495 | 2.939 | 34.681 | 0.2892 |
| 30 | 26-Jul | 7.9 | 8.8 | 113 | 1711 | 105 | 1600 | 2.502 | 37.183 | 0.3101 |
| 30 | 27-Jul | 8.8 | 7.7 | 77 | 1788 | 69 | 1669 | 1.708 | 38.891 | 0.3243 |
| 30 | 28-Jul | 9.0 | 6.6 | 164 | 1952 | 123 | 1792 | 3.784 | 42.675 | 0.3559 |
| 30 | 29-Jul | 8.5 | 6.2 | 99 | 2051 | 85 | 1877 | 2.221 | 44.895 | 0.3744 |
| 31 | 30-Jul | 8.8 | 6.4 | 154 | 2205 | 143 | 2020 | 3.540 | 48.436 | 0.4039 |
| 31 | 31-Jul | 9.2 | 6.5 | 258 | 2463 | 249 | 2269 | 6.000 | 54.436 | 0.4540 |
| 31 | 1-Aug | 8.5 | 6.0 | 173 | 2636 | 157 | 2426 | 4.016 | 58.451 | 0.4874 |
| 31 | 2-Aug | 8.5 | 5.3 | 139 | 2775 | 131 | 2557 | 3.296 | 61.748 | 0.5149 |
| 31 | 3-Aug | 8.9 | 4.8 | 79 | 2854 | 77 | 2634 | 1.752 | 63.500 | 0.5295 |
| 31 | 4-Aug | 8.5 | 4.4 | 88 | 2942 | 85 | 2719 | 1.896 | 65.396 | 0.5454 |
| 31 | 5-Aug | 8.0 | 4.1 | 86 | 3028 | 85 | 2804 | 1.904 | 67.300 | 0.5612 |
| 32 | 6-Aug | 8.5 | 4.2 | 104 | 3132 | 103 | 2907 | 2.253 | 69.553 | 0.5800 |
| 32 | 7-Aug | 9.0 | 4.1 | 94 | 3226 | 91 | 2998 | 2.040 | 71.593 | 0.5970 |
| 32 | 8-Aug | 8.4 | 4.3 | 140 | 3366 | 131 | 3129 | 3.099 | 74.692 | 0.6229 |
| 32 | 9-Aug | 8.0 | 5.3 | 177 | 3543 | 165 | 3294 | 3.971 | 78.663 | 0.6560 |
| 32 | 10-Aug | 7.0 | 6.5 | 101 | 3644 | 98 | 3392 | 2.499 | 81.162 | 0.6768 |
| 32 | 11-Aug | 4.0 | 8.6 | 21 | 3665 | 21 | 3413 | 0.446 | 81.608 | 0.6806 |
| 32 | 12-Aug | 6.5 | 6.9 | 48 | 3713 | 46 | 3459 | 1.123 | 82.731 | 0.6899 |
| 33 | 13-Aug | 5.6 | 8.0 | 81 | 3794 | 76 | 3535 | 1.769 | 84.500 | 0.7047 |
| 33 | 14-Aug | 5.0 | 8.0 | 102 | 3896 | 96 | 3631 | 2.233 | 86.733 | 0.7233 |
| 33 | 15-Aug | 4.5 | 7.9 | 134 | 4030 | 129 | 3760 | 2.945 | 89.678 | 0.7479 |
| 33 | 16-Aug | 4.3 | 8.1 | 84 | 4114 | 77 | 3837 | 1.833 | 91.511 | 0.7631 |
| 33 | 17-Aug | 4.6 | 8.0 | 67 | 4181 | 61 | 3898 | 1.446 | 92.957 | 0.7752 |

Appendix B.1 (cont'd). Catches, number tagged, and CPUE of sockeye salmon in the fish wheels at Canyon Island, 2006.

| Stat | | Temp. | Level | FW Catches | | FW Tagged | | | CPUE | |
|---|---|---|---|---|---|---|---|---|---|---|
| Week | Date | (°C) | (dec.ft.) | Daily | Cum. | Daily | Cum. | Daily | Cum. | Cum. Prop |
| 33 | 18-Aug | 7.9 | 6.4 | 31 | 4212 | 31 | 3929 | 0.667 | 93.625 | 0.7808 |
| 33 | 19-Aug | 7.5 | 6.4 | 41 | 4253 | 35 | 3964 | 0.876 | 94.500 | 0.7881 |
| 34 | 20-Aug | 8.3 | 5.4 | 67 | 4320 | 61 | 4025 | 1.467 | 95.968 | 0.8003 |
| 34 | 21-Aug | 7.2 | 4.8 | 93 | 4413 | 91 | 4116 | 2.094 | 98.062 | 0.8178 |
| 34 | 22-Aug | 7.2 | 4.8 | 157 | 4570 | 150 | 4266 | 4.272 | 102.334 | 0.8534 |
| 34 | 23-Aug | 8.5 | 4.5 | 23 | 4593 | 22 | 4288 | 0.993 | 103.327 | 0.8617 |
| 34 | 24-Aug | 7.0 | 4.5 | 36 | 4629 | 33 | 4321 | 0.776 | 104.102 | 0.8681 |
| 34 | 25-Aug | 8.5 | 4.7 | 41 | 4670 | 38 | 4359 | 0.891 | 104.994 | 0.8756 |
| 34 | 26-Aug | 6.5 | 6.8 | 33 | 4703 | 33 | 4392 | 0.707 | 105.701 | 0.8815 |
| 35 | 27-Aug | 6.2 | 5.9 | 56 | 4759 | 55 | 4447 | 1.233 | 106.934 | 0.8918 |
| 35 | 28-Aug | 6.4 | 4.6 | 77 | 4836 | 73 | 4520 | 1.727 | 108.661 | 0.9062 |
| 35 | 29-Aug | 6.5 | 5.1 | 37 | 4873 | 33 | 4553 | 0.800 | 109.461 | 0.9128 |
| 35 | 30-Aug | 6.5 | 6.0 | 36 | 4909 | 36 | 4589 | 0.780 | 110.241 | 0.9193 |
| 35 | 31-Aug | 6.0 | 5.5 | 31 | 4940 | 30 | 4619 | 0.734 | 110.975 | 0.9255 |
| 35 | 1-Sep | 6.0 | 8.8 | 3 | 4943 | 0 | 4619 | 0.113 | 111.088 | 0.9264 |
| 35 | 2-Sep | 5.0 | 14.0 | | 4943 | | 4619 | 0.000 | 111.088 | 0.9264 |
| 36 | 3-Sep | 6.0 | 12.5 | 0 | 4943 | 0 | 4619 | 0.000 | 111.088 | 0.9264 |
| 36 | 4-Sep | 7.1 | 8.5 | 35 | 4978 | 35 | 4654 | 1.634 | 112.722 | 0.9400 |
| 36 | 5-Sep | 7.5 | 7.5 | 30 | 5008 | 29 | 4683 | 1.094 | 113.816 | 0.9491 |
| 36 | 6-Sep | 7.0 | 6.5 | 52 | 5060 | 48 | 4731 | 1.186 | 115.002 | 0.9590 |
| 36 | 7-Sep | 7.0 | 5.7 | 19 | 5079 | 19 | 4750 | 0.411 | 115.413 | 0.9625 |
| 36 | 8-Sep | 6.0 | 5.8 | 20 | 5099 | 18 | 4768 | 0.459 | 115.873 | 0.9663 |
| 36 | 9-Sep | 7.0 | 5.5 | 24 | 5123 | 22 | 4790 | 0.521 | 116.393 | 0.9706 |
| 37 | 10-Sep | 6.0 | 5.2 | 21 | 5144 | 21 | 4811 | 0.455 | 116.848 | 0.9744 |
| 37 | 11-Sep | 5.8 | 5.1 | 31 | 5175 | 30 | 4841 | 0.669 | 117.517 | 0.9800 |
| 37 | 12-Sep | 6.5 | 4.7 | 42 | 5217 | 41 | 4882 | 0.944 | 118.461 | 0.9879 |
| 37 | 13-Sep | 6.0 | 3.9 | 18 | 5235 | 17 | 4899 | 0.390 | 118.850 | 0.9911 |
| 37 | 14-Sep | 5.0 | 3.8 | 14 | 5249 | 11 | 4910 | 0.302 | 119.152 | 0.9936 |
| 37 | 15-Sep | 5.0 | 3.9 | 9 | 5258 | 9 | 4919 | 0.194 | 119.346 | 0.9953 |
| 37 | 16-Sep | 2.0 | 4.7 | 7 | 5265 | 7 | 4926 | 0.150 | 119.496 | 0.9965 |
| 38 | 17-Sep | 1.5 | 5.7 | 4 | 5269 | 4 | 4930 | 0.085 | 119.581 | 0.9972 |
| 38 | 18-Sep | 3.5 | 2.5 | 2 | 5271 | 2 | 4932 | 0.085 | 119.665 | 0.9979 |
| 38 | 19-Sep | 5.0 | 2.2 | | 5271 | | 4932 | 0.000 | 119.665 | 0.9979 |
| 38 | 20-Sep | 5.0 | 2.1 | 0 | 5271 | 0 | 4932 | 0.000 | 119.665 | 0.9979 |
| 38 | 21-Sep | 5.2 | 2.0 | 0 | 5271 | 0 | 4932 | 0.000 | 119.665 | 0.9979 |
| 38 | 22-Sep | 5.0 | 2.2 | 0 | 5271 | 0 | 4932 | 0.000 | 119.665 | 0.9979 |
| 38 | 23-Sep | 5.5 | 2.3 | 0 | 5271 | 0 | 4932 | 0.000 | 119.665 | 0.9979 |
| 39 | 24-Sep | 4.5 | 4.0 | 0 | 5271 | 0 | 4932 | 0.000 | 119.665 | 0.9979 |
| 39 | 25-Sep | 5.0 | 7.8 | 1 | 5272 | 0 | 4932 | 0.036 | 119.701 | 0.9982 |
| 39 | 26-Sep | 4.5 | 7.2 | 0 | 5272 | 0 | 4932 | 0.000 | 119.701 | 0.9982 |
| 39 | 27-Sep | 5.0 | 7.2 | 1 | 5273 | 0 | 4932 | 0.021 | 119.723 | 0.9984 |
| 39 | 28-Sep | 4.7 | 8.3 | 1 | 5274 | 0 | 4932 | 0.021 | 119.744 | 0.9986 |
| 39 | 29-Sep | 4.5 | 9.7 | 0 | 5274 | 0 | 4932 | 0.000 | 119.744 | 0.9986 |
| 39 | 30-Sep | 4.5 | 8.0 | 1 | 5275 | 0 | 4932 | 0.021 | 119.765 | 0.9988 |
| 40 | 1-Oct | | 6.2 | 1 | 5276 | 0 | 4932 | 0.021 | 119.786 | 0.9989 |
| 40 | 2-Oct | | 4.7 | 4 | 5280 | 0 | 4932 | 0.085 | 119.871 | 0.9996 |
| 40 | 3-Oct | | 3.7 | 2 | 5282 | 0 | 4932 | 0.043 | 119.914 | 1.0000 |

Appendix B.2. Catches and CPUE of pink and chum salmon in the fish wheels at Canyon Island, 2006.

| | | PINK | | | | | CHUM | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Stat | | Total Catches | | CPUE | | | Total Catches | | CPUE | | |
| Week | Date | Daily | Cum. | Daily | Cum. | Cum. Prop | Daily | Cum. | Daily | Cum. | Cum. Prop |
| 25 | 23-Jun | 0 | 0 | 0.000 | 0.0000 | 0.0000 | 0 | 0 | 0.000 | 0.0000 | 0.0000 |
| 25 | 24-Jun | 2 | 2 | 0.046 | 0.0463 | 0.0001 | 0 | 0 | 0.000 | 0.0000 | 0.0000 |
| 26 | 25-Jun | 5 | 7 | 0.108 | 0.1539 | 0.0003 | 0 | 0 | 0.000 | 0.0000 | 0.0000 |
| 26 | 26-Jun | 4 | 11 | 0.085 | 0.2387 | 0.0005 | 0 | 0 | 0.000 | 0.0000 | 0.0000 |
| 26 | 27-Jun | 4 | 15 | 0.085 | 0.3239 | 0.0007 | 0 | 0 | 0.000 | 0.0000 | 0.0000 |
| 26 | 28-Jun | 8 | 23 | 0.169 | 0.4929 | 0.0010 | 0 | 0 | 0.000 | 0.0000 | 0.0000 |
| 26 | 29-Jun | 22 | 45 | 0.464 | 0.9569 | 0.0020 | 0 | 0 | 0.000 | 0.0000 | 0.0000 |
| 26 | 30-Jun | 20 | 65 | 0.424 | 1.3809 | 0.0028 | 1 | 1 | 0.021 | 0.0212 | 0.0020 |
| 26 | 1-Jul | 1 | 66 | 0.021 | 1.4019 | 0.0029 | 0 | 1 | 0.000 | 0.0212 | 0.0020 |
| 27 | 2-Jul | 0 | 66 | 0.000 | 1.4019 | 0.0029 | 0 | 1 | 0.000 | 0.0212 | 0.0020 |
| 27 | 3-Jul | 7 | 73 | 0.148 | 1.5496 | 0.0032 | 0 | 1 | 0.000 | 0.0212 | 0.0020 |
| 27 | 4-Jul | 30 | 103 | 0.639 | 2.1889 | 0.0045 | 0 | 1 | 0.000 | 0.0212 | 0.0020 |
| 27 | 5-Jul | 51 | 154 | 1.079 | 3.2683 | 0.0067 | 0 | 1 | 0.000 | 0.0212 | 0.0020 |
| 27 | 6-Jul | 100 | 254 | 2.132 | 5.4001 | 0.0111 | 0 | 1 | 0.000 | 0.0212 | 0.0020 |
| 27 | 7-Jul | 216 | 470 | 4.620 | 10.0204 | 0.0207 | 0 | 1 | 0.000 | 0.0212 | 0.0020 |
| 27 | 8-Jul | 155 | 625 | 3.303 | 13.3239 | 0.0275 | 0 | 1 | 0.000 | 0.0212 | 0.0020 |
| 28 | 9-Jul | 81 | 706 | 1.726 | 15.0502 | 0.0310 | 2 | 3 | 0.043 | 0.0638 | 0.0060 |
| 28 | 10-Jul | 150 | 856 | 3.243 | 18.2935 | 0.0377 | 1 | 4 | 0.022 | 0.0854 | 0.0080 |
| 28 | 11-Jul | 137 | 993 | 2.956 | 21.2499 | 0.0438 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 28 | 12-Jul | 263 | 1256 | 5.706 | 26.9561 | 0.0556 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 28 | 13-Jul | 577 | 1833 | 12.522 | 39.4778 | 0.0814 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 28 | 14-Jul | 373 | 2206 | 8.035 | 47.5131 | 0.0979 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 28 | 15-Jul | 434 | 2640 | 9.384 | 56.8969 | 0.1173 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 29 | 16-Jul | 212 | 2852 | 4.550 | 61.4472 | 0.1267 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 29 | 17-Jul | 330 | 3182 | 7.161 | 68.6087 | 0.1414 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 29 | 18-Jul | 352 | 3534 | 7.570 | 76.1786 | 0.1570 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 29 | 19-Jul | 760 | 4294 | 16.401 | 92.5791 | 0.1908 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 29 | 20-Jul | 891 | 5185 | 19.370 | 111.9487 | 0.2307 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 29 | 21-Jul | 1610 | 6795 | 35.000 | 146.9487 | 0.3029 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 29 | 22-Jul | 165 | 6960 | 3.498 | 150.4467 | 0.3101 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 30 | 23-Jul | 295 | 7255 | 6.484 | 156.9302 | 0.3235 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 30 | 24-Jul | 560 | 7815 | 12.354 | 169.2840 | 0.3489 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 30 | 25-Jul | 772 | 8587 | 17.061 | 186.3448 | 0.3841 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 30 | 26-Jul | 1083 | 9670 | 23.976 | 210.3209 | 0.4335 | 0 | 4 | 0.000 | 0.0854 | 0.0080 |
| 30 | 27-Jul | 1045 | 10715 | 23.181 | 233.5019 | 0.4813 | 1 | 5 | 0.022 | 0.1076 | 0.0101 |
| 30 | 28-Jul | 3535 | 14250 | 81.564 | 315.0663 | 0.6494 | 0 | 5 | 0.000 | 0.1076 | 0.0101 |
| 30 | 29-Jul | 1202 | 15452 | 26.963 | 342.0290 | 0.7050 | 0 | 5 | 0.000 | 0.1076 | 0.0101 |
| 31 | 30-Jul | 1061 | 16513 | 24.391 | 366.4198 | 0.7552 | 0 | 5 | 0.000 | 0.1076 | 0.0101 |
| 31 | 31-Jul | 953 | 17466 | 22.163 | 388.5826 | 0.8009 | 1 | 6 | 0.023 | 0.1309 | 0.0122 |
| 31 | 1-Aug | 988 | 18454 | 22.934 | 411.5167 | 0.8482 | 0 | 6 | 0.000 | 0.1309 | 0.0122 |
| 31 | 2-Aug | 892 | 19346 | 21.152 | 432.6692 | 0.8918 | 0 | 6 | 0.000 | 0.1309 | 0.0122 |
| 31 | 3-Aug | 737 | 20083 | 16.349 | 449.0179 | 0.9255 | 0 | 6 | 0.000 | 0.1309 | 0.0122 |
| 31 | 4-Aug | 477 | 20560 | 10.278 | 459.2959 | 0.9467 | 0 | 6 | 0.000 | 0.1309 | 0.0122 |
| 31 | 5-Aug | 158 | 20718 | 3.498 | 462.7938 | 0.9539 | 1 | 7 | 0.022 | 0.1530 | 0.0143 |
| 32 | 6-Aug | 107 | 20825 | 2.318 | 465.1113 | 0.9587 | 0 | 7 | 0.000 | 0.1530 | 0.0143 |
| 32 | 7-Aug | 108 | 20933 | 2.344 | 467.4550 | 0.9635 | 1 | 8 | 0.022 | 0.1747 | 0.0163 |

Appendix B.2 (Cont'd). Catches and CPUE of pink and chum salmon in the fish wheels at Canyon Island, 2006.

| | | PINK | | | | | CHUM | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Stat | | Total Catches | | CPUE | | | Total Catches | | CPUE | | |
| Week | Date | Daily | Cum. | Daily | Cum. | Cum. Prop | Daily | Cum. | Daily | Cum. | Cum. Prop |
| 32 | 8-Aug | 175 | 21108 | 3.874 | 471.3293 | 0.9715 | 0 | 8 | 0.000 | 0.1747 | 0.0163 |
| 32 | 9-Aug | 141 | 21249 | 3.164 | 474.4928 | 0.9780 | 1 | 9 | 0.022 | 0.1972 | 0.0184 |
| 32 | 10-Aug | 59 | 21308 | 1.460 | 475.9525 | 0.9810 | 1 | 10 | 0.025 | 0.2219 | 0.0207 |
| 32 | 11-Aug | 11 | 21319 | 0.234 | 476.1862 | 0.9815 | 0 | 10 | 0.000 | 0.2219 | 0.0207 |
| 32 | 12-Aug | 10 | 21329 | 0.234 | 476.4201 | 0.9820 | 1 | 11 | 0.023 | 0.2453 | 0.0229 |
| 33 | 13-Aug | 98 | 21427 | 2.140 | 478.5603 | 0.9864 | 4 | 15 | 0.087 | 0.3326 | 0.0311 |
| 33 | 14-Aug | 59 | 21486 | 1.292 | 479.8522 | 0.9890 | 3 | 18 | 0.066 | 0.3983 | 0.0372 |
| 33 | 15-Aug | 79 | 21565 | 1.736 | 481.5884 | 0.9926 | 4 | 22 | 0.088 | 0.4863 | 0.0455 |
| 33 | 16-Aug | 33 | 21598 | 0.720 | 482.3085 | 0.9941 | 3 | 25 | 0.065 | 0.5517 | 0.0516 |
| 33 | 17-Aug | 29 | 21627 | 0.626 | 482.9344 | 0.9954 | 8 | 33 | 0.173 | 0.7244 | 0.0677 |
| 33 | 18-Aug | 13 | 21640 | 0.280 | 483.2143 | 0.9960 | 1 | 34 | 0.022 | 0.7459 | 0.0697 |
| 33 | 19-Aug | 6 | 21646 | 0.128 | 483.3424 | 0.9962 | 6 | 40 | 0.128 | 0.8740 | 0.0817 |
| 34 | 20-Aug | 22 | 21668 | 0.482 | 483.8242 | 0.9972 | 13 | 53 | 0.285 | 1.1587 | 0.1083 |
| 34 | 21-Aug | 16 | 21684 | 0.360 | 484.1845 | 0.9980 | 12 | 65 | 0.270 | 1.4290 | 0.1336 |
| 34 | 22-Aug | 4 | 21688 | 0.109 | 484.2934 | 0.9982 | 9 | 74 | 0.245 | 1.6739 | 0.1565 |
| 34 | 23-Aug | 1 | 21689 | 0.043 | 484.3365 | 0.9983 | 3 | 77 | 0.130 | 1.8034 | 0.1686 |
| 34 | 24-Aug | 8 | 21697 | 0.172 | 484.5089 | 0.9986 | 10 | 87 | 0.215 | 2.0188 | 0.1887 |
| 34 | 25-Aug | 7 | 21704 | 0.152 | 484.6610 | 0.9990 | 19 | 106 | 0.413 | 2.4319 | 0.2273 |
| 34 | 26-Aug | 4 | 21708 | 0.086 | 484.7468 | 0.9991 | 4 | 110 | 0.086 | 2.5176 | 0.2353 |
| 35 | 27-Aug | 3 | 21711 | 0.066 | 484.8128 | 0.9993 | 6 | 116 | 0.132 | 2.6497 | 0.2477 |
| 35 | 28-Aug | 1 | 21712 | 0.022 | 484.8353 | 0.9993 | 29 | 145 | 0.651 | 3.3002 | 0.3085 |
| 35 | 29-Aug | 4 | 21716 | 0.086 | 484.9217 | 0.9995 | 10 | 155 | 0.216 | 3.5164 | 0.3287 |
| 35 | 30-Aug | 5 | 21721 | 0.108 | 485.0300 | 0.9997 | 3 | 158 | 0.065 | 3.5814 | 0.3348 |
| 35 | 31-Aug | 0 | 21721 | 0.000 | 485.0300 | 0.9997 | 12 | 170 | 0.284 | 3.8654 | 0.3613 |
| 35 | 1-Sep | 0 | 21721 | 0.000 | 485.0300 | 0.9997 | 0 | 170 | 0.000 | 3.8654 | 0.3613 |
| 35 | 2-Sep | | 21721 | 0.000 | 485.0300 | 0.9997 | | 170 | 0.000 | 3.8654 | 0.3613 |
| 36 | 3-Sep | 0 | 21721 | 0.000 | 485.0300 | 0.9997 | 0 | 170 | 0.000 | 3.8654 | 0.3613 |
| 36 | 4-Sep | 1 | 21722 | 0.047 | 485.0767 | 0.9998 | 4 | 174 | 0.187 | 4.0522 | 0.3788 |
| 36 | 5-Sep | 0 | 21722 | 0.000 | 485.0767 | 0.9998 | 13 | 187 | 0.474 | 4.5263 | 0.4231 |
| 36 | 6-Sep | 2 | 21724 | 0.046 | 485.1224 | 0.9999 | 36 | 223 | 0.821 | 5.3476 | 0.4999 |
| 36 | 7-Sep | 0 | 21724 | 0.000 | 485.1224 | 0.9999 | 36 | 259 | 0.778 | 6.1260 | 0.5726 |
| 36 | 8-Sep | 0 | 21724 | 0.000 | 485.1224 | 0.9999 | 17 | 276 | 0.390 | 6.5164 | 0.6091 |
| 36 | 9-Sep | 0 | 21724 | 0.000 | 485.1224 | 0.9999 | 7 | 283 | 0.152 | 6.6684 | 0.6233 |
| 37 | 10-Sep | 0 | 21724 | 0.000 | 485.1224 | 0.9999 | 14 | 297 | 0.303 | 6.9714 | 0.6517 |
| 37 | 11-Sep | 0 | 21724 | 0.000 | 485.1224 | 0.9999 | 23 | 320 | 0.496 | 7.4678 | 0.6981 |
| 37 | 12-Sep | 0 | 21724 | 0.000 | 485.1224 | 0.9999 | 19 | 339 | 0.427 | 7.8948 | 0.7380 |
| 37 | 13-Sep | 0 | 21724 | 0.000 | 485.1224 | 0.9999 | 17 | 356 | 0.368 | 8.2628 | 0.7724 |
| 37 | 14-Sep | 1 | 21725 | 0.022 | 485.1439 | 1.0000 | 16 | 372 | 0.345 | 8.6075 | 0.8046 |
| 37 | 15-Sep | 0 | 21725 | 0.000 | 485.1439 | 1.0000 | 21 | 393 | 0.452 | 9.0599 | 0.8469 |
| 37 | 16-Sep | 1 | 21726 | 0.021 | 485.1653 | 1.0000 | 18 | 411 | 0.385 | 9.4449 | 0.8829 |
| 38 | 17-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 13 | 424 | 0.277 | 9.7215 | 0.9088 |
| 38 | 18-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 5 | 429 | 0.211 | 9.9328 | 0.9285 |
| 38 | 19-Sep | | 21726 | 0.000 | 485.1653 | 1.0000 | | 429 | 0.000 | 9.9328 | 0.9285 |
| 38 | 20-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 0 | 429 | 0.000 | 9.9328 | 0.9285 |
| 38 | 21-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 1 | 430 | 0.000 | 9.9328 | 0.9285 |
| 38 | 22-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 0 | 430 | 0.000 | 9.9328 | 0.9285 |
| 38 | 23-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 0 | 430 | 0.000 | 9.9328 | 0.9285 |
| 39 | 24-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 0 | 430 | 0.000 | 9.9328 | 0.9285 |
| 39 | 25-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 0 | 430 | 0.000 | 9.9328 | 0.9285 |
| 39 | 26-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 1 | 431 | 0.021 | 9.9538 | 0.9305 |
| 39 | 27-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 4 | 435 | 0.085 | 10.0391 | 0.9384 |
| 39 | 28-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 1 | 436 | 0.021 | 10.0602 | 0.9404 |
| 39 | 29-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 4 | 440 | 0.084 | 10.1447 | 0.9483 |
| 39 | 30-Sep | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 5 | 445 | 0.106 | 10.2505 | 0.9582 |
| 40 | 1-Oct | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 2 | 447 | 0.042 | 10.2927 | 0.9621 |
| 40 | 2-Oct | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 12 | 459 | 0.256 | 10.5487 | 0.9861 |
| 40 | 3-Oct | 0 | 21726 | 0.000 | 485.1653 | 1.0000 | 7 | 466 | 0.149 | 10.6977 | 1.0000 |

## Appendix B.3 Catches of dolly varden and steelhead in the fish wheels at Canyon Island, 2006.

| Stat Week | Date | Total Catches Daily | Total Catches Cum. | Total Catches Daily | Total Catches Cum. |
|---|---|---|---|---|---|
| 17 | 23-Apr | | | | |
| 17 | 24-Apr | | | | |
| 17 | 25-Apr | | | | |
| 17 | 26-Apr | | | | |
| 17 | 27-Apr | 0 | 0 | 0 | 0 |
| 17 | 28-Apr | 0 | 0 | 0 | 0 |
| 17 | 29-Apr | 1 | 1 | 0 | 0 |
| 18 | 30-Apr | 1 | 2 | 0 | 0 |
| 18 | 1-May | 2 | 4 | 0 | 0 |
| 18 | 2-May | 1 | 5 | 0 | 0 |
| 18 | 3-May | 0 | 5 | 0 | 0 |
| 18 | 4-May | 0 | 5 | 0 | 0 |
| 18 | 5-May | 2 | 7 | 0 | 0 |
| 18 | 6-May | 1 | 8 | 1 | 1 |
| 19 | 7-May | 0 | 8 | 0 | 1 |
| 19 | 8-May | 3 | 11 | 0 | 1 |
| 19 | 9-May | 1 | 12 | 0 | 1 |
| 19 | 10-May | 7 | 19 | 0 | 1 |
| 19 | 11-May | 0 | 19 | 0 | 1 |
| 19 | 12-May | 7 | 26 | 0 | 1 |
| 19 | 13-May | 5 | 31 | 0 | 1 |
| 20 | 14-May | | 31 | | 1 |
| 20 | 15-May | 5 | 36 | 0 | 1 |
| 20 | 16-May | | 36 | | 1 |
| 20 | 17-May | 1 | 37 | 0 | 1 |
| 20 | 18-May | 1 | 38 | 0 | 1 |
| 20 | 19-May | 0 | 38 | 0 | 1 |
| 20 | 20-May | 0 | 38 | 0 | 1 |
| 21 | 21-May | 1 | 39 | 0 | 1 |
| 21 | 22-May | 3 | 42 | 0 | 1 |
| 21 | 23-May | 0 | 42 | 0 | 1 |
| 21 | 24-May | 0 | 42 | 0 | 1 |
| 21 | 25-May | 0 | 42 | 0 | 1 |
| 21 | 26-May | 1 | 43 | 0 | 1 |
| 21 | 27-May | 0 | 43 | 0 | 1 |
| 22 | 28-May | 0 | 43 | 0 | 1 |
| 22 | 29-May | 0 | 43 | 0 | 1 |
| 22 | 30-May | 0 | 43 | 0 | 1 |
| 22 | 31-May | 0 | 43 | 0 | 1 |
| 22 | 1-Jun | 0 | 43 | 0 | 1 |
| 22 | 2-Jun | 0 | 43 | 0 | 1 |
| 22 | 3-Jun | 1 | 44 | 0 | 1 |
| 23 | 4-Jun | | 44 | | 1 |
| 23 | 5-Jun | 0 | 44 | 0 | 1 |
| 23 | 6-Jun | 0 | 44 | 0 | 1 |
| 23 | 7-Jun | 0 | 44 | 0 | 1 |
| 23 | 8-Jun | 0 | 44 | 0 | 1 |
| 23 | 9-Jun | 1 | 45 | 0 | 1 |
| 23 | 10-Jun | 1 | 46 | 0 | 1 |
| 24 | 11-Jun | 0 | 46 | 0 | 1 |
| 24 | 12-Jun | 0 | 46 | 0 | 1 |
| 24 | 13-Jun | 0 | 46 | 1 | 2 |
| 24 | 14-Jun | 0 | 46 | 0 | 2 |
| 24 | 15-Jun | 0 | 46 | 0 | 2 |
| 24 | 16-Jun | 0 | 46 | 0 | 2 |
| 24 | 17-Jun | 0 | 46 | 0 | 2 |
| 25 | 18-Jun | 0 | 46 | 0 | 2 |
| 25 | 19-Jun | 0 | 46 | 0 | 2 |
| 25 | 20-Jun | 0 | 46 | 0 | 2 |
| 25 | 21-Jun | 0 | 46 | 0 | 2 |
| 25 | 22-Jun | 2 | 48 | 1 | 3 |
| 25 | 23-Jun | 1 | 49 | 1 | 4 |
| 25 | 24-Jun | 2 | 51 | 1 | 5 |
| 26 | 25-Jun | 2 | 53 | 1 | 6 |
| 26 | 26-Jun | 3 | 56 | 1 | 7 |
| 26 | 27-Jun | 2 | 58 | 0 | 7 |
| 26 | 28-Jun | 1 | 59 | 1 | 8 |
| 26 | 29-Jun | 0 | 59 | 1 | 9 |
| 26 | 30-Jun | 2 | 61 | 0 | 9 |
| 26 | 1-Jul | 2 | 63 | 0 | 9 |
| 27 | 2-Jul | 1 | 64 | 0 | 9 |
| 27 | 3-Jul | 4 | 68 | 0 | 9 |
| 27 | 4-Jul | 2 | 70 | 0 | 9 |
| 27 | 5-Jul | 1 | 71 | 0 | 9 |
| 27 | 6-Jul | 4 | 75 | 0 | 9 |
| 27 | 7-Jul | 2 | 77 | 0 | 9 |
| 27 | 8-Jul | 2 | 79 | 0 | 9 |
| 28 | 9-Jul | 3 | 82 | 0 | 9 |
| 28 | 10-Jul | 2 | 84 | 0 | 9 |
| 28 | 11-Jul | 10 | 94 | 1 | 10 |
| 28 | 12-Jul | 7 | 101 | 0 | 10 |
| 28 | 13-Jul | 6 | 107 | 0 | 10 |
| 28 | 14-Jul | 0 | 107 | 0 | 10 |
| 28 | 15-Jul | 4 | 111 | 0 | 10 |
| 29 | 16-Jul | 6 | 117 | 0 | 10 |
| 29 | 17-Jul | 13 | 130 | 0 | 10 |
| 29 | 18-Jul | 11 | 141 | 0 | 10 |
| 29 | 19-Jul | 11 | 152 | 0 | 10 |
| 29 | 20-Jul | 15 | 167 | 0 | 10 |
| 29 | 21-Jul | 7 | 174 | 0 | 10 |
| 29 | 22-Jul | 0 | 174 | 0 | 10 |
| 30 | 23-Jul | 1 | 175 | 0 | 10 |
| 30 | 24-Jul | 2 | 177 | 0 | 10 |
| 30 | 25-Jul | 0 | 177 | 0 | 10 |
| 30 | 26-Jul | 0 | 177 | 0 | 10 |
| 30 | 27-Jul | 1 | 178 | 0 | 10 |
| 30 | 28-Jul | 2 | 180 | 0 | 10 |
| 30 | 29-Jul | 9 | 189 | 0 | 10 |
| 31 | 30-Jul | 2 | 191 | 0 | 10 |
| 31 | 31-Jul | 4 | 195 | 0 | 10 |
| 31 | 1-Aug | 4 | 199 | 0 | 10 |
| 31 | 2-Aug | 2 | 201 | 0 | 10 |
| 31 | 3-Aug | 2 | 203 | 0 | 10 |
| 31 | 4-Aug | 3 | 206 | 0 | 10 |
| 31 | 5-Aug | 3 | 209 | 0 | 10 |
| 32 | 6-Aug | 2 | 211 | 0 | 10 |
| 32 | 7-Aug | 6 | 217 | 0 | 10 |
| 32 | 8-Aug | 3 | 220 | 0 | 10 |
| 32 | 9-Aug | 6 | 226 | 0 | 10 |
| 32 | 10-Aug | 1 | 227 | 0 | 10 |
| 32 | 11-Aug | 0 | 227 | 0 | 10 |
| 32 | 12-Aug | 0 | 227 | 0 | 10 |
| 33 | 13-Aug | 0 | 227 | 0 | 10 |
| 33 | 14-Aug | 4 | 231 | 0 | 10 |
| 33 | 15-Aug | 9 | 240 | 0 | 10 |
| 33 | 16-Aug | 5 | 245 | 0 | 10 |
| 33 | 17-Aug | 6 | 251 | 0 | 10 |
| 33 | 18-Aug | 1 | 252 | 1 | 11 |
| 33 | 19-Aug | 2 | 254 | 0 | 11 |
| 34 | 20-Aug | 4 | 258 | 0 | 11 |
| 34 | 21-Aug | 1 | 259 | 0 | 11 |
| 34 | 22-Aug | 10 | 269 | 1 | 12 |
| 34 | 23-Aug | 3 | 272 | 0 | 12 |
| 34 | 24-Aug | 3 | 275 | 0 | 12 |
| 34 | 25-Aug | 2 | 277 | 0 | 12 |
| 34 | 26-Aug | 0 | 277 | 0 | 12 |
| 35 | 27-Aug | 0 | 277 | 0 | 12 |
| 35 | 28-Aug | 3 | 280 | 1 | 13 |
| 35 | 29-Aug | 3 | 283 | 2 | 15 |
| 35 | 30-Aug | 4 | 287 | 0 | 15 |
| 35 | 31-Aug | 1 | 288 | 1 | 16 |
| 35 | 1-Sep | 0 | 288 | 0 | 16 |
| 35 | 2-Sep | | 288 | | 16 |
| 36 | 3-Sep | 0 | 288 | 0 | 16 |
| 36 | 4-Sep | 4 | 292 | 2 | 18 |
| 36 | 5-Sep | 2 | 294 | 0 | 18 |
| 36 | 6-Sep | 5 | 299 | 1 | 19 |
| 36 | 7-Sep | 3 | 302 | 0 | 19 |
| 36 | 8-Sep | 3 | 305 | 0 | 19 |
| 36 | 9-Sep | 3 | 308 | 0 | 19 |
| 37 | 10-Sep | 3 | 311 | 0 | 19 |
| 37 | 11-Sep | 6 | 317 | 1 | 20 |
| 37 | 12-Sep | 4 | 321 | 0 | 20 |
| 37 | 13-Sep | 6 | 327 | 1 | 21 |
| 37 | 14-Sep | 3 | 330 | 1 | 22 |
| 37 | 15-Sep | 3 | 333 | 1 | 23 |
| 37 | 16-Sep | 3 | 336 | 0 | 23 |
| 38 | 17-Sep | 0 | 336 | 0 | 23 |
| 38 | 18-Sep | 0 | 336 | 1 | 24 |
| 38 | 19-Sep | | 336 | | 24 |
| 38 | 20-Sep | 0 | 336 | 4 | 28 |
| 38 | 21-Sep | 0 | 336 | 1 | 29 |
| 38 | 22-Sep | 0 | 336 | 1 | 30 |
| 38 | 23-Sep | 0 | 336 | 7 | 37 |
| 39 | 24-Sep | 0 | 336 | 1 | 38 |
| 39 | 25-Sep | 1 | 337 | 0 | 38 |
| 39 | 26-Sep | 0 | 337 | 0 | 38 |
| 39 | 27-Sep | 0 | 337 | 1 | 39 |
| 39 | 28-Sep | 1 | 338 | 0 | 39 |
| 39 | 29-Sep | 0 | 338 | 0 | 39 |
| 39 | 30-Sep | 0 | 338 | 0 | 39 |
| 40 | 1-Oct | 0 | 338 | 0 | 39 |
| 40 | 2-Oct | 3 | 341 | 1 | 40 |
| 40 | 3-Oct | 0 | 341 | 7 | 47 |

Appendix C.1. Age composition of sockeye salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2003 | 2003 | 2002 | 2002 | 2001 | 2001 | 2001 | 2000 | 2000 | |
| | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | Total |
| Statistical Weeks 23-24 (June 4 - 17) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | 1 | | 1 | 3 | | 10 | | | | 15 |
| Percent | | 5.9 | | 5.9 | 17.6 | | 58.8 | | | | 88.2 |
| Std. Error | | 5.9 | | 5.9 | 9.5 | | 12.3 | | | | 8.1 |
| Female | | | | | | | | | | | |
| Sample Size | | | | | | | 2 | | | | 2 |
| Percent | | | | | | | 11.8 | | | | 11.8 |
| Std. Error | | | | | | | 8.1 | | | | 8.1 |
| All Fish | | | | | | | | | | | |
| Sample Size | | 1 | | 1 | 3 | | 12 | | | | 17 |
| Percent | | 5.9 | | 5.9 | 17.6 | | 70.6 | | | | 100.0 |
| Std. Error | | 5.9 | | 5.9 | 9.5 | | 11.4 | | | | |
| Statistical Week 25 (June 18 - 24) | | | | | | | | | | | |
| Male | | 2 | | | | | | | | | |
| Sample Size | | 2 | | | 7 | | 4 | | | | 13 |
| Percent | | 8.3 | | | 29.2 | | 16.7 | | | | 54.2 |
| Std. Error | | 5.8 | | | 9.5 | | 7.8 | | | | 10.4 |
| Female | | | | | | | | | | | |
| Sample Size | | | | | 5 | | 5 | | | 1 | 11 |
| Percent | | | | | 20.8 | | 20.8 | | | 4.2 | 45.8 |
| Std. Error | | | | | 8.5 | | 8.5 | | | 4.2 | 10.4 |
| All Fish | | | | | | | | | | | |
| Sample Size | | 2 | | | 12 | | 9 | | | 1 | 24 |
| Percent | | 8.3 | | | 50.0 | | 37.5 | | | 4.2 | 100.0 |
| Std. Error | | 5.8 | | | 10.4 | | 10.1 | | | 4.2 | |

Appendix C.1 (Cont'd). Age composition of sockeye salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2003 | 2003 | 2002 | 2002 | 2001 | 2001 | 2001 | 2000 | 2000 | |
| | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | Total |
| Statistical Week 26 (June 25 - July 1) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | 6 | 1 | 2 | 24 | | 24 | | | | 57 |
| Percent | | 4.4 | 0.7 | 1.5 | 17.6 | | 17.6 | | | | 41.9 |
| Std. Error | | 1.8 | 0.7 | 1.0 | 3.3 | | 3.3 | | | | 4.2 |
| Female | | | | | | | | | | | |
| Sample Size | | 1 | | 2 | 40 | | 34 | | | 2 | 79 |
| Percent | | 0.7 | | 1.5 | 29.4 | | 25.0 | | | 1.5 | 58.1 |
| Std. Error | | 0.7 | | 1.0 | 3.9 | | 3.7 | | | 1.0 | 4.2 |
| All Fish | | | | | | | | | | | |
| Sample Size | | 7 | 1 | 4 | 64 | | 58 | | | 2 | 136 |
| Percent | | 5.1 | 0.7 | 2.9 | 47.1 | | 42.6 | | | 1.5 | 100.0 |
| Std. Error | | 1.9 | 0.7 | 1.5 | 4.3 | | 4.3 | | | 1.0 | |
| Statistical Week 27 (July 2 - 8) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | 14 | | | 45 | | 15 | 2 | | 0 | 76 |
| Percent | | 10.7 | | | 34.4 | | 11.5 | 1.5 | | | 58.0 |
| Std. Error | | 2.7 | | | 4.2 | | 2.8 | 1.1 | | | 4.3 |
| Female | | | | | | | | | | | |
| Sample Size | | | | | 21 | | 32 | 2 | | | 55 |
| Percent | | | | | 16.0 | | 24.4 | 1.5 | | | 42.0 |
| Std. Error | | | | | 3.2 | | 3.8 | 1.1 | | | 4.3 |
| All Fish | | | | | | | | | | | |
| Sample Size | | 14 | | | 66 | | 47 | 4 | | | 131 |
| Percent | | 10.7 | | | 50.4 | | 35.9 | 3.1 | | | 100.0 |
| Std. Error | | 2.7 | | | 4.4 | | 4.2 | 1.5 | | | |

Appendix C.1 (Cont'd). Age composition of sockeye salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2003 | 2003 | 2002 | 2002 | 2001 | 2001 | 2001 | 2000 | 2000 | |
| | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | Total |
| Statistical Week 28 (July 9 - 15) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | 17 | 3 | | 63 | | 20 | 5 | | 2 | 110 |
| Percent | | 8.3 | 1.5 | | 30.7 | | 9.8 | 2.4 | | 1.0 | 53.7 |
| Std. Error | | 1.9 | 0.8 | | 3.2 | | 2.1 | 1.1 | | 0.7 | 3.5 |
| Female | | | | | | | | | | | |
| Sample Size | | 1 | | 1 | 31 | | 55 | 3 | 1 | 3 | 95 |
| Percent | | 0.5 | | 0.5 | 15.1 | | 26.8 | 1.5 | 0.5 | 1.5 | 46.3 |
| Std. Error | | 0.5 | | 0.5 | 2.5 | | 3.1 | 0.8 | 0.5 | 0.8 | 3.5 |
| All Fish | | | | | | | | | | | |
| Sample Size | | 18 | 3 | 1 | 94 | | 75 | 8 | 1 | 5 | 205 |
| Percent | | 8.8 | 1.5 | 0.5 | 45.9 | | 36.6 | 3.9 | 0.5 | 2.4 | 100.0 |
| Std. Error | | 2.0 | 0.8 | 0.5 | 3.5 | | 3.4 | 1.4 | 0.5 | 1.1 | |
| Statistical Week 29 (July 16 - 22) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | 14 | 2 | | 42 | | 24 | 2 | | 1 | 85 |
| Percent | | 8.4 | 1.2 | | 25.1 | | 14.4 | 1.2 | | 0.6 | 50.9 |
| Std. Error | | 2.2 | 0.8 | | 3.4 | | 2.7 | 0.8 | | 0.6 | 3.9 |
| Female | | | | | | | | | | | |
| Sample Size | | 1 | | 3 | 17 | | 55 | 3 | | 3 | 82 |
| Percent | | 0.6 | | 1.8 | 10.2 | | 32.9 | 1.8 | | 1.8 | 49.1 |
| Std. Error | | 0.6 | | 1.0 | 2.3 | | 3.6 | 1.0 | | 1.0 | 3.9 |
| All Fish | | | | | | | | | | | |
| Sample Size | | 15 | 2 | 3 | 59 | | 79 | 5 | | 4 | 167 |
| Percent | | 9.0 | 1.2 | 1.8 | 35.3 | | 47.3 | 3.0 | | 2.4 | 100.0 |
| Std. Error | | 2.2 | 0.8 | 1.0 | 3.7 | | 3.9 | 1.3 | | 1.2 | |

Appendix C.1 (Cont'd). Age composition of sockeye salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2003 | 2003 | 2002 | 2002 | 2001 | 2001 | 2001 | 2000 | 2000 | |
| | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | Total |
| Statistical Week 30 (July 23 - 29) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | 20 | 2 | 3 | 21 | | 41 | 3 | | 2 | 92 |
| Percent | | 11.6 | 1.2 | 1.7 | 12.1 | | 23.7 | 1.7 | | 1.2 | 53.2 |
| Std. Error | | 2.4 | 0.8 | 1.0 | 2.5 | | 3.2 | 1.0 | | 0.8 | 3.8 |
| Female | | | | | | | | | | | |
| Sample Size | | 1 | | 4 | 9 | | 62 | 2 | | 3 | 81 |
| Percent | | 0.6 | | 2.3 | 5.2 | | 35.8 | 1.2 | | 1.7 | 46.8 |
| Std. Error | | 0.6 | | 1.1 | 1.7 | | 3.7 | 0.8 | | 1.0 | 3.8 |
| All Fish | | | | | | | | | | | |
| Sample Size | | 21 | 2 | 7 | 30 | | 103 | 5 | | 5 | 173 |
| Percent | | 12.1 | 1.2 | 4.0 | 17.3 | | 59.5 | 2.9 | | 2.9 | 100.0 |
| Std. Error | | 2.5 | 0.8 | 1.5 | 2.9 | | 3.7 | 1.3 | | 1.3 | |
| Statistical Week 31 (July 30 - August 5) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | 1 | 22 | 3 | 2 | 26 | | 34 | 4 | | 1 | 93 |
| Percent | 0.5 | 11.6 | 1.6 | 1.1 | 13.7 | | 17.9 | 2.1 | | 0.5 | 48.9 |
| Std. Error | 0.5 | 2.3 | 0.9 | 0.7 | 2.5 | | 2.8 | 1.0 | | 0.5 | 3.6 |
| Female | | | | | | | | | | | |
| Sample Size | | 1 | | 18 | 11 | | 58 | 5 | 1 | 3 | 97 |
| Percent | | 0.5 | | 9.5 | 5.8 | | 30.5 | 2.6 | 0.5 | 1.6 | 51.1 |
| Std. Error | | 0.5 | | 2.1 | 1.7 | | 3.3 | 1.2 | 0.5 | 0.9 | 3.6 |
| All Fish | | | | | | | | | | | |
| Sample Size | 1 | 23 | 3 | 20 | 37 | | 92 | 9 | 1 | 4 | 190 |
| Percent | 0.5 | 12.1 | 1.6 | 10.5 | 19.5 | | 48.4 | 4.7 | 0.5 | 2.1 | 100.0 |
| Std. Error | 0.5 | 2.4 | 0.9 | 2.2 | 2.9 | | 3.6 | 1.5 | 0.5 | 1.0 | |

Appendix C.1 (Cont'd). Age composition of sockeye salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2003 | 2003 | 2002 | 2002 | 2001 | 2001 | 2001 | 2000 | 2000 | |
| | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | Total |
| Statistical Week 32 (August 6 - August 12) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | 1 | 19 | 2 | 8 | 14 | | 26 | 3 | | | 73 |
| Percent | 0.6 | 10.6 | 1.1 | 4.5 | 7.8 | | 14.5 | 1.7 | | | 40.8 |
| Std. Error | 0.6 | 2.3 | 0.8 | 1.5 | 2.0 | | 2.6 | 1.0 | | | 3.7 |
| Female | | | | | | | | | | | |
| Sample Size | | 1 | | 14 | 13 | | 61 | 10 | | 7 | 106 |
| Percent | | 0.6 | | 7.8 | 7.3 | | 34.1 | 5.6 | | 3.9 | 59.2 |
| Std. Error | | 0.6 | | 2.0 | 1.9 | | 3.6 | 1.7 | | 1.5 | 3.7 |
| All Fish | | | | | | | | | | | |
| Sample Size | 1 | 20 | 2 | 22 | 27 | | 87 | 13 | | 7 | 179 |
| Percent | 0.6 | 11.2 | 1.1 | 12.3 | 15.1 | | 48.6 | 7.3 | | 3.9 | 100.0 |
| Std. Error | 0.6 | 2.4 | 0.8 | 2.5 | 2.7 | | 3.7 | 1.9 | | 1.5 | |
| Statistical Week 33 (August 13 - 19) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | 2 | 20 | 7 | | 15 | | 20 | 8 | | 2 | 74 |
| Percent | 1.1 | 11.1 | 3.9 | | 8.3 | | 11.1 | 4.4 | | 1.1 | 41.1 |
| Std. Error | 0.8 | 2.3 | 1.4 | | 2.1 | | 2.3 | 1.5 | | 0.8 | 3.7 |
| Female | | | | | | | | | | | |
| Sample Size | | 3 | | 12 | 23 | | 50 | 15 | 1 | 2 | 106 |
| Percent | | 1.7 | | 6.7 | 12.8 | | 27.8 | 8.3 | 0.6 | 1.1 | 58.9 |
| Std. Error | | 1.0 | | 1.9 | 2.5 | | 3.3 | 2.1 | 0.6 | 0.8 | 3.7 |
| All Fish | | | | | | | | | | | |
| Sample Size | 2 | 23 | 7 | 12 | 38 | | 70 | 23 | 1 | 4 | 180 |
| Percent | 1.1 | 12.8 | 3.9 | 6.7 | 21.1 | | 38.9 | 12.8 | 0.6 | 2.2 | 100.0 |
| Std. Error | 0.8 | 2.5 | 1.4 | 1.9 | 3.1 | | 3.6 | 2.5 | 0.6 | 1.1 | |

Appendix C.1 (Cont'd). Age composition of sockeye salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2003 | 2003 | 2002 | 2002 | 2001 | 2001 | 2001 | 2000 | 2000 | |
| | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | Total |
| Statistical Week 34 (August 20 - 26) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | 3 | 2 | 1 | 11 | | 24 | 6 | 1 | 1 | 49 |
| Percent | | 1.9 | 1.3 | 0.6 | 7.1 | | 15.6 | 3.9 | 0.6 | 0.6 | 31.8 |
| Std. Error | | 1.1 | 0.9 | 0.6 | 2.1 | | 2.9 | 1.6 | 0.6 | 0.6 | 3.8 |
| Female | | | | | | | | | | | |
| Sample Size | | | | 14 | 12 | | 70 | 6 | | 3 | 105 |
| Percent | | | | 9.1 | 7.8 | | 45.5 | 3.9 | | 1.9 | 68.2 |
| Std. Error | | | | 2.3 | 2.2 | | 4.0 | 1.6 | | 1.1 | 3.8 |
| All Fish | | | | | | | | | | | |
| Sample Size | | 3 | 2 | 15 | 23 | | 94 | 12 | 1 | 4 | 154 |
| Percent | | 1.9 | 1.3 | 9.7 | 14.9 | | 61.0 | 7.8 | 0.6 | 2.6 | 100.0 |
| Std. Error | | 1.1 | 0.9 | 2.4 | 2.9 | | 3.9 | 2.2 | 0.6 | 1.3 | |
| Statistical Week 35 (August 27 - September 2) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | 3 | 1 | 1 | 6 | | 21 | 2 | | 1 | 35 |
| Percent | | 2.6 | 0.9 | 0.9 | 5.3 | | 18.4 | 1.8 | | 0.9 | 30.7 |
| Std. Error | | 1.5 | 0.9 | 0.9 | 2.1 | | 3.6 | 1.2 | | 0.9 | 4.3 |
| Female | | | | | | | | | | | |
| Sample Size | | 1 | | 6 | 10 | | 42 | 17 | 1 | 2 | 79 |
| Percent | | 0.9 | | 5.3 | 8.8 | | 36.8 | 14.9 | 0.9 | 1.8 | 69.3 |
| Std. Error | | 0.9 | | 2.1 | 2.7 | | 4.5 | 3.4 | 0.9 | 1.2 | 4.3 |
| All Fish | | | | | | | | | | | |
| Sample Size | | 4 | 1 | 7 | 16 | | 63 | 19 | 1 | 3 | 114 |
| Percent | | 3.5 | 0.9 | 6.1 | 14.0 | | 55.3 | 16.7 | 0.9 | 2.6 | 100.0 |
| Std. Error | | 1.7 | 0.9 | 2.3 | 3.3 | | 4.7 | 3.5 | 0.9 | 1.5 | |

Appendix C.1 (Cont'd). Age composition of sockeye salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2003 | 2003 | 2002 | 2002 | 2001 | 2001 | 2001 | 2000 | 2000 | |
| | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | Total |
| Statistical Week 36 (September 3 - 9) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | | 1 | | 7 | | 14 | 11 | | 1 | 34 |
| Percent | | | 1.0 | | 6.9 | | 13.7 | 10.8 | | 1.0 | 33.3 |
| Std. Error | | | 1.0 | | 2.5 | | 3.4 | 3.1 | | 1.0 | 4.7 |
| Female | | | | | | | | | | | |
| Sample Size | | | | 5 | 17 | | 35 | 11 | | | 68 |
| Percent | | | | 4.9 | 16.7 | | 34.3 | 10.8 | | | 66.7 |
| Std. Error | | | | 2.1 | 3.7 | | 4.7 | 3.1 | | | 4.7 |
| All Fish | | | | | | | | | | | |
| Sample Size | | | 1 | 5 | 24 | | 49 | 22 | | 1 | 102 |
| Percent | | | 1.0 | 4.9 | 23.5 | | 48.0 | 21.6 | | 1.0 | 100.0 |
| Std. Error | | | 1.0 | 2.1 | 4.2 | | 5.0 | 4.1 | | 1.0 | |
| Statistical Week 37 (September 10 - 16) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | | 2 | 2 | 5 | | 12 | 5 | 1 | 3 | 30 |
| Percent | | | 2.3 | 2.3 | 5.8 | | 14.0 | 5.8 | 1.2 | 3.5 | 34.9 |
| Std. Error | | | 1.6 | 1.6 | 2.5 | | 3.8 | 2.5 | 1.2 | 2.0 | 5.2 |
| Female | | | | | | | | | | | |
| Sample Size | | | | 3 | 9 | | 30 | 13 | 1 | | 56 |
| Percent | | | | 3.5 | 10.5 | | 34.9 | 15.1 | 1.2 | | 65.1 |
| Std. Error | | | | 2.0 | 3.3 | | 5.2 | 3.9 | 1.2 | | 5.2 |
| All Fish | | | | | | | | | | | |
| Sample Size | | | 2 | 5 | 14 | | 42 | 18 | 2 | 3 | 86 |
| Percent | | | 2.3 | 5.8 | 16.3 | | 48.8 | 20.9 | 2.3 | 3.5 | 100.0 |
| Std. Error | | | 1.6 | 2.5 | 4.0 | | 5.4 | 4.4 | 1.6 | 2.0 | |

Appendix C.1 (Cont'd). Age composition of sockeye salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2003 | 2003 | 2002 | 2002 | 2001 | 2001 | 2001 | 2000 | 2000 | |
| | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | Total |
| Statistical Week 38 (September 17 - 23) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | | | | | | | | | | | 0 |
| Percent | | | | | | | | | | | 0.0 |
| Std. Error | | | | | | | | | | | |
| Female | | | | | | | | | | | |
| Sample Size | | | | | | | 1 | 1 | | | 2 |
| Percent | | | | | | | 50.0 | 50.0 | | | 100.0 |
| Std. Error | | | | | | | 50.0 | 50.0 | | | 0.0 |
| All Fish | | | | | | | | | | | |
| Sample Size | | | | | | | 1 | 1 | | | 2 |
| Percent | | | | | | | 50.0 | 50.0 | | | 100.0 |
| Std. Error | | | | | | | 50.0 | 50.0 | | | |

| | Brood Year and Age Class | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2004 | 2003 | 2003 | 2002 | 2002 | 2001 | 2001 | 2001 | 2000 | 2000 | |
| | 0.1 | 0.2 | 1.1 | 0.3 | 1.2 | 0.4 | 1.3 | 2.2 | 1.4 | 2.3 | Total |
| Combined Periods (June 4 - October 7) | | | | | | | | | | | |
| Male | | | | | | | | | | | |
| Sample Size | 4.0 | 141.0 | 26.0 | 20.0 | 289.0 | | 290.0 | 52.0 | | 14.0 | 836 |
| Percent | 0.2 | 7.6 | 1.4 | 1.1 | 15.5 | | 15.6 | 2.8 | | 0.8 | 44.9 |
| Std. Error | 0.1 | 0.6 | 0.3 | 0.2 | 0.8 | | 0.8 | 0.4 | | 0.2 | 1.2 |
| Female | | | | | | | | | | | |
| Sample Size | | 10.0 | | 82.0 | 218.0 | 0.0 | 593.0 | 88.0 | 5.0 | 29.0 | 1025 |
| Percent | | 0.5 | | 4.4 | 11.7 | 0.0 | 31.9 | 4.7 | 0.3 | 1.6 | 55.1 |
| Std. Error | | 0.2 | | 0.5 | 0.7 | 0.0 | 1.1 | 0.5 | 0.1 | 0.3 | 1.2 |
| All Fish | | | | | | | | | | | |
| Sample Size | 4 | 151 | 26 | 102 | 507 | | 883 | 140 | 5 | 43 | 1861 |
| Percent | 0.2 | 8.1 | 1.4 | 5.5 | 27.2 | | 47.4 | 7.5 | 0.3 | 2.3 | 100.0 |
| Std. Error | 0.1 | 0.6 | 0.3 | 0.5 | 1.0 | | 1.2 | 0.6 | 0.1 | 0.3 | |

Appendix C.2. Age composition of chum salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | |
|---|---|---|---|---|
| | 2003 | 2002 | 2001 | |
| | 0.2 | 0.3 | 0.4 | Total |
| Statistical Weeks 26 - 28 (June 25 - 15) | | | | |
| Male | | | | |
| Sample Size | | 1 | 2 | 3 |
| Percent | | 25.0 | 50.0 | 75.0 |
| Std. Error | | 25.0 | 28.9 | 25.0 |
| Female | | | | |
| Sample Size | | | 1 | 1 |
| Percent | | | 2.0 | 2.0 |
| Std. Error | | | 8.1 | 8.1 |
| All Fish | | | | |
| Sample Size | | 1 | 3 | 4 |
| Percent | | 25.0 | 75.0 | 100.0 |
| Std. Error | | 25.0 | 25.0 | |
| Statistical Week 29 (July 16 - 22) | | | | |
| Male | | | | |
| Sample Size | | | | 0 |
| Percent | | | | 0.0 |
| Std. Error | | | | |
| Female | | | | |
| Sample Size | | | | 0 |
| Percent | | | | 0.0 |
| Std. Error | | | | |
| All Fish | | | | |
| Sample Size | | | | 0 |
| Percent | | | | 0.0 |
| Std. Error | | | | |

Appendix C.2 (Cont'd). Age composition of chum salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | |
|---|---|---|---|---|
| | 2003 | 2002 | 2001 | |
| | 0.2 | 0.3 | 0.4 | Total |
| Statistical Week 30 (July 23 - 29) | | | | |
| Male | | | | |
| Sample Size | | | | 0 |
| Percent | | | | 0.0 |
| Std. Error | | | | |
| Female | | | | |
| Sample Size | | | | 0 |
| Percent | | | | 0.0 |
| Std. Error | | | | |
| All Fish | | | | |
| Sample Size | | | | 0 |
| Percent | | | | 0.0 |
| Std. Error | | | | |
| Statistical Week 31 (July 30 - August 5) | | | | |
| Male | | | | |
| Sample Size | | | | |
| Percent | | | | |
| Std. Error | | | | |
| Female | | | | |
| Sample Size | | 1 | | 1 |
| Percent | | 100.0 | | 100.0 |
| Std. Error | | 0.0 | | 0.0 |
| All Fish | | | | |
| Sample Size | | 1 | | 1 |
| Percent | | 100.0 | | 100.0 |
| Std. Error | | 0.0 | | |

Appendix C.2 (Cont'd). Age composition of chum salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | |
|---|---|---|---|---|
| | 2003 | 2002 | 2001 | |
| | 0.2 | 0.3 | 0.4 | Total |
| Statistical Week 32 (August 6 - August 12) | | | | |
| Male | | | | |
| Sample Size | | 2 | 1 | 3 |
| Percent | | 50.0 | 25.0 | 75.0 |
| Std. Error | | 28.9 | 25.0 | 25.0 |
| Female | | | | |
| Sample Size | | 1 | | 1 |
| Percent | | 25.0 | | 25.0 |
| Std. Error | | 25.0 | | 25.0 |
| All Fish | | | | |
| Sample Size | | 3 | 1 | 4 |
| Percent | | 75.0 | 25.0 | 100.0 |
| Std. Error | | 25.0 | 25.0 | |
| Statistical Week 33 (August 13 - 19) | | | | |
| Male | | | | |
| Sample Size | | 5 | 7 | 12 |
| Percent | | 21.7 | 30.4 | 52.2 |
| Std. Error | | 8.8 | 9.8 | 10.6 |
| Female | | | | |
| Sample Size | | 8 | 3 | 11 |
| Percent | | 34.8 | 13.0 | 47.8 |
| Std. Error | | 10.2 | 7.2 | 10.6 |
| All Fish | | | | |
| Sample Size | | 13 | 10 | 23 |
| Percent | | 56.5 | 43.5 | 100.0 |
| Std. Error | | 10.6 | 10.6 | |

Appendix C.2 (Cont'd). Age composition of chum salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | |
|---|---|---|---|---|
| | 2003 | 2002 | 2001 | |
| | 0.2 | 0.3 | 0.4 | Total |
| Statistical Week 34 (August 20 - 26) | | | | |
| Male | | | | |
| Sample Size | | 17 | 13 | 30 |
| Percent | | 30.9 | 23.6 | 54.5 |
| Std. Error | | 6.3 | 5.8 | 6.8 |
| Female | | | | |
| Sample Size | | 15 | 10 | 25 |
| Percent | | 27.3 | 18.2 | 45.5 |
| Std. Error | | 6.1 | 5.2 | 6.8 |
| All Fish | | | | |
| Sample Size | | 32 | 23 | 55 |
| Percent | | 58.2 | 41.8 | 100.0 |
| Std. Error | | 6.7 | 6.7 | |
| Statistical Week 35 (August 27 - September 2) | | | | |
| Male | | | | |
| Sample Size | | 14 | 8 | 22 |
| Percent | | 26.4 | 15.1 | 41.5 |
| Std. Error | | 6.1 | 5.0 | 6.8 |
| Female | | | | |
| Sample Size | | 18 | 13 | 31 |
| Percent | | 34.0 | 24.5 | 58.5 |
| Std. Error | | 6.6 | 6.0 | 6.8 |
| All Fish | | | | |
| Sample Size | | 32 | 21 | 53 |
| Percent | | 60.4 | 39.6 | 100.0 |
| Std. Error | | 6.8 | 6.8 | |

Appendix C.2 (Cont'd). Age composition of chum salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | |
|---|---|---|---|---|
| | 2003 | 2002 | 2001 | |
| | 0.2 | 0.3 | 0.4 | Total |
| Statistical Week 36 (September 3 - 9) | | | | |
| Male | | | | |
| Sample Size | | 35 | 14 | 49 |
| Percent | | 36.5 | 14.6 | 51.0 |
| Std. Error | | 4.9 | 3.6 | 5.1 |
| Female | | | | |
| Sample Size | | 35 | 12 | 47 |
| Percent | | 36.5 | 12.5 | 49.0 |
| Std. Error | | 4.9 | 3.4 | 5.1 |
| All Fish | | | | |
| Sample Size | | 70 | 26 | 96 |
| Percent | | 72.9 | 27.1 | 100.0 |
| Std. Error | | 4.6 | 4.6 | |
| Statistical Week 37 (September 10 - 16) | | | | |
| Male | | | | |
| Sample Size | | 28 | 11 | 39 |
| Percent | | 24.6 | 9.6 | 34.2 |
| Std. Error | | 4.0 | 2.8 | 4.5 |
| Female | | | | |
| Sample Size | | 55 | 20 | 75 |
| Percent | | 48.2 | 17.5 | 65.8 |
| Std. Error | | 4.7 | 3.6 | 4.5 |
| All Fish | | | | |
| Sample Size | | 83 | 31 | 114 |
| Percent | | 72.8 | 27.2 | 100.0 |
| Std. Error | | 4.2 | 4.2 | |

Appendix C.2 (Cont'd). Age composition of chum salmon in the Canyon Island fish wheels by sex and fishing period, 2006.

| | Brood Year and Age Class | | | |
|---|---|---|---|---|
| | 2003 | 2002 | 2001 | |
| | 0.2 | 0.3 | 0.4 | Total |
| Statistical Week 38 (September 17 - 23) | | | | |
| Male | | | | |
| Sample Size | | 1 | 2 | 3 |
| Percent | | 6.7 | 13.3 | 20.0 |
| Std. Error | | | 9.1 | 10.7 |
| Female | | | | |
| Sample Size | | 9 | 3 | 12 |
| Percent | | 60.0 | 20.0 | 80.0 |
| Std. Error | | 13.1 | 10.7 | 10.7 |
| All Fish | | | | |
| Sample Size | | 10 | 5 | 15 |
| Percent | | 66.7 | 33.3 | 100.0 |
| Std. Error | | 12.6 | 12.6 | |
| Statistical Week 39 (September 24 - 30) | | | | |
| Male | | | | |
| Sample Size | | 6 | | 6 |
| Percent | | 35.3 | | 35.3 |
| Std. Error | | | | 11.9 |
| Female | | | | |
| Sample Size | 1 | 8 | 2 | 11 |
| Percent | 5.9 | 47.1 | 11.8 | 64.7 |
| Std. Error | 5.9 | 12.5 | 8.1 | 11.9 |
| All Fish | | | | |
| Sample Size | 1 | 14 | 2 | 17 |
| Percent | 5.9 | 82.4 | 11.8 | 100.0 |
| Std. Error | 5.9 | 9.5 | 8.1 | |

| | Brood Year and Age Class | | | |
|---|---|---|---|---|
| | 2003 | 2002 | 2001 | |
| | 0.2 | 0.3 | 0.4 | Total |
| Combined Periods (July 3 - October 1) | | | | |
| Male | | | | |
| Sample Size | | 109 | 58 | 167 |
| Percent | | 28.5 | 15.2 | 43.7 |
| Std. Error | | 2.3 | 1.8 | 2.5 |
| Female | | | | |
| Sample Size | 1 | 150 | 64 | 215 |
| Percent | 0.3 | 39.3 | 16.8 | 56.3 |
| Std. Error | 0.3 | 2.5 | 1.9 | 2.5 |
| All Fish | | | | |
| Sample Size | 1 | 259 | 122 | 382 |
| Percent | 0.3 | 67.8 | 31.9 | 100.0 |
| Std. Error | 0.3 | 2.4 | 2.4 | |

Appendix D. Results of secondary marking study to test for short term tag loss for sockeye captured at the Canyon Island fish wheels, 2006.

| Stat. Week | Canadian Catch | Tags Recovered | Fishery Ratio | Examined for 2nd | Number of 2nd Marks | Sample ratio | Fishery Ratio - Sampled Ratio |
|---|---|---|---|---|---|---|---|
| 24 | 25 | | | | | | |
| 25 | 127 | 2 | 0.016 | | | | |
| 26 | 811 | 2 | 0.002 | 189 | 1 | 0.005 | -0.003 |
| 27 | 930 | 36 | 0.039 | 200 | 6 | 0.030 | 0.009 |
| 28 | 1,109 | 32 | 0.029 | 200 | 6 | 0.030 | -0.001 |
| 29 | 1,757 | 42 | 0.024 | 200 | 3 | 0.015 | 0.009 |
| 30 | 1,919 | 45 | 0.023 | 200 | 1 | 0.005 | 0.018 |
| 31 | 6,058 | 72 | 0.012 | 200 | 3 | 0.015 | -0.003 |
| 32 | 2,223 | 174 | 0.078 | 200 | | 0.000 | 0.078 |
| 33 | 2,825 | 99 | 0.035 | 200 | 1 | 0.005 | 0.030 |
| 34 | 2,569 | 103 | 0.040 | 200 | 3 | 0.015 | 0.025 |
| 35 | 746 | 81 | 0.109 | 200 | 1 | 0.005 | 0.104 |
| 36 | 122 | 10 | 0.082 | | | | |
| 37 | 120 | 7 | 0.058 | 100 | 9 | 0.090 | -0.032 |
| 38 | 20 | 9 | 0.450 | 47 | | 0.000 | 0.450 |
| Totals | 21,209 | 714 | 0.034 | 2,136 | 34 | 0.016 | 0.018 |